WEST DEALER ISSUE
Pages 9-16

Croplife®

FOR RICHER FIELDS

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL MANUFACTURER, FORMULATOR AND DEALER

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British Experts See Surpluses of Nitrogen in 1956

Aikman, Ltd., Says World Supply Much Greater than Demand

LONDON — If the world demand for nitrogen does not increase at a rate greater than that now apparent, production will have to be cut back, according to views expressed by Aikman (London), Ltd., the British authority on the world nitrogen trade, in its semi-annual report.

Aikman estimates the world surplus last June was about 120,000 tons but sets the potential surplus for June, 1956, at 370,000 tons. Most will be in the interior of the U.S., it is stated.

Prices, the report points out, have shown a definite tendency to weaken owing to the large supplies on hand, with the main weakness showing in ammonium sulfate.

(Continued on page 8)

Inside You'll Find

Over the Counter 9
What's New 10
What's Been Happening 11
Oscar and Pat 12
Bug of the Week 15
World Report 18
Editorials 22
Meeting Memos 23
Index of Advertisers 23

Production of Inorganics Shows Gain in October

WASHINGTON — Production of synthetic anhydrous ammonia totaled 265,926 short tons in October, a gain of 15% from 231,954 short tons in September, the U.S. Department of Commerce has reported.

Output of ammonium nitrate, original solution (100% NH_4NO_3) in October was 180,737 short tons, up 21% from 149,982 short tons in September. Production of phosphoric acid (50% H_3PO_4) in October was 320,269 short tons, a gain of 1% from 318,254 short tons in September.

Pesticide Production and Sales Activity Greatly Improved in 1955; Prospects for Next Year Good Also, NAC Assn. Says

WASHINGTON, D.C. — Production and sales activity in the agricultural chemicals industry picked up in 1955, and industry leaders foresee further expansion in both production and sales next year (according to the general year-end industry roundup just issued by the National Agricultural Chemicals Assn.).

This upward trend ends a three-year period of reduced activity in the industry following the peak output year of 1951. The indications are, NAC says, that when the final production figures are in, 1955 may rank as the second best year, production-wise, in industry history.

Profits, however, have tended to be limited despite the higher sales volume, because of the intense competition in the trade. The industry includes some 40 manufacturers of basic pest control chemicals and about 200 major formulators. The formulators mix the basic chemicals with other materials to produce insecticides, fungicides, herbicides, and rodenticides. These products are used primarily in agriculture, to reduce crop losses due to insects, plant diseases, weeds, rodents and other pests. The industry produces some 40,000 registered products.

Production of most major products of the industry during the first eight months of 1955 was far ahead of production during the same period of 1954. Output of DDT, for example, was up 24%; 2,4-D, up 26%; and copper sulfate, a fungicide, was up 13%. Drops in output of lead arsenate, which was down 12%, and benzene hexachloride (BHC), down 30%, are accounted for in part by the large carryover stocks from the 1954 growing season.

The following are the production figures provided by the U.S. Department of Agriculture and the U.S. Department of Commerce for these products in pounds. All figures are for the January-August periods of 1954 and 1955 except for copper sulfate, which figures are for the January-September periods.

Actual total sales figures are not

(Continued on page 8)

Cotton Conference Told:

Use of All Chemical Aids Necessary for Optimum Production

By DONALD NETH
Croplife Managing Editor

MEMPHIS — A pre-Christmas package of good production practices was opened at the first annual Beltwide Cotton Production Conference at Hotel Peabody here Dec. 15-16.

About 1,000 agricultural leaders from every cotton-growing state heard speakers from industry, college and government emphasize the meeting theme that the package of good production practices includes all aspects ranging from basic soil studies to harvesting and marketing.

Weed control, insect control, defoliation and fertilization are among the most important practices in the package, the conference was told. The conference was sponsored by the National Cotton Council in cooperation with land grant colleges in the Cotton Belt, the U.S. Department of Agriculture, the agricultural chemical industry, farm organizations and others.

In past years, separate conferences have been held on insect control, weed control and defoliation. The production conference consolidated these and covered other practices as well.

Farmers today need only half the land required 30 years ago to produce a bale of cotton, Dr. Russell Coleman, executive vice president of the National Plant Food Institute, Washington, D.C., told the conference.

"The most significant thing here, however, is not the fact that America's farmers can produce more and more cotton, but rather that they can lower production costs by increasing per-acre yields," he said.

Dr. Coleman said that a major contributing factor to per-acre yields is increased use of fertilizer. He added that, by combining all up-to-date production practices, farmers can further increase average yields from 339 lb. to 520 lb.

To illustrate the importance of adequate plant food in cotton production, the speaker cited a recent study at Clemson, South Carolina, where an average farmer was shown to have a $45 fixed cost per acre regardless of yield.

"By making a small additional investment in fertilizer," Dr. Coleman explained, "the farmer can actually cut his cost per pound from 28¢ to

(Continued on page 20)

Calspray Names NH3 Distributor

RICHMOND, CAL. — Agricultural Ammonia Service, Inc., pioneers in the bulk handling of anhydrous ammonia, has been named by California Spray-Chemical Corp. as sole authorized distributor of Calspray's product, Ortho NH_3 in designated areas of California. The joint announcement was made by Arthur W. Mohr, president of Calspray and Fred M. Stewart, vice president and general manager of Agri-Serv.

The territory to be covered by Agri-Serv is described as being throughout the San Joaquin Valley and the coastal counties of Los Angeles, Ventura and Santa Barbara, according to the terms of the agreement.

Calspray, a wholly-owned subsidiary of Standard Oil Company of California, has entered the agricultural ammonia field with the distinction of being one of the world's largest

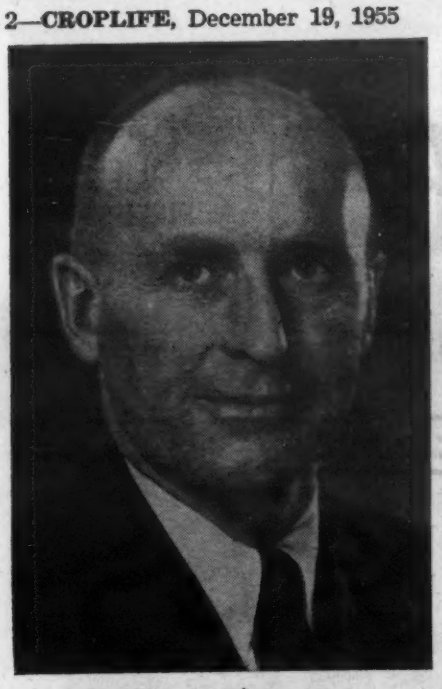
(Continued on page 17)

Vietnam Awarded Fertilizer Authorization

WASHINGTON—The International Cooperation Administration has announced a $350,000 procurement authorization to Vietnam for phosphates and mixed fertilizers. The contract period ends next March 31 and the terminal delivery date is next June 30. Source is world wide.

The Publishers and Staff of Croplife Wish a

Merry Christmas to All



Hugh S. Ferguson

Hugh S. Ferguson Heads W. R. Grace Chemical Group

NEW YORK—Hugh S. Ferguson, president of Dewey and Almy Chemical Company Division of W. R. Grace & Co., has been named by the Grace board of directors as executive vice president in charge of the chemical group in the parent company. At the same time the board announced also the election of Alexander T. Daignault as an executive vice president and chief financial officer of the firm.

The chemical group now headed by Mr. Ferguson includes four divisions—Dewey and Almy Chemical Co., Davison Chemical Co., Grace Chemical Co. and Grace Chemical Research and Development Co.

Until this appointment, responsibility for directing Grace chemical activities was exercised by Charles E. Wilson, chairman of the board. Mr. Ferguson will continue for the time being as president of Dewey and Almy.

Mr. Daignault, who will join the company Jan. 15, comes to Grace from Westinghouse Air Brake Co., where he has been vice president in charge of finance. He was earlier associated with Dewey and Almy before its merger into Grace.

The new head of Grace chemical operations, with 33 years in the chemical industry, has spent his entire business career with Dewey and Almy. Mr. Ferguson joined the Cambridge firm upon graduation from Massachusetts Institute of Technology in 1923 and in various executive capacities has played a major role in the company's growth. He was a director from 1926.

Mr. Ferguson became president of Dewey and Almy in January, 1953. When the company became a division of Grace in November, 1954, he was named a director and a vice president of the parent company.

California Equipment Dealers Post Sales Gain

SAN FRANCISCO — According to a report by the Division of Research and Statistics of the California State Board of Equalization, retail sales by farm implement dealers—including all types of products used on the farm—rose to an estimated $52,072,000 between April 1 and June 30 this year, from $43,712,000 during the same three months of 1954.

Farm and garden supply stores increased their sales during the quarter by less than 2%. Estimated sales from these stores, based on the amount of sales taxes collected by the Board of Equalization, has risen from $26,038,000 during the second quarter of 1954 to $26,543,000 this year.

Poor Distribution, Not Too Much Output, Causes Surplus, South Dakota Dealers Told

COLLEGE STATION, S.D.—"There will be hungry people in this state, in these United States, next year," Ephriam Hixson, chief of the division of agriculture at South Dakota State College, said in a welcoming address to the 150 men attending the sixth annual dealers fertilizer short course on the college campus Dec. 2.

It is not a problem of too much production; it is a problem of poor distribution, Mr. Hixson said. And with our increasing population we will need to continue to increase our farm production, not just total production but production per acre, he added.

Along the same line—the need for increasing unit production—L. M. Bond, Moorhead, Minn., who presided over the morning session, pointed out that more than a million acres of good agricultural land is taken out of farming each year. This land is being used for industrial purposes, highways, golf links, and country clubs, Mr. Bond said.

"So there is every reason in the world for higher production and the use of fertilizer," he said.

The use of fertilizer has increased tremendously in recent years, Kasper Peter, assistant division manager of fertilizers for the Phillips Petroleum Co., told the dealers. We now use more than 20 million tons of fertilizer a year in the U.S. This huge amount, enough to fill two trains stretching from coast to coast, gives rise to many problems. As fertilizer use is seasonal, most of this amount must be handled in a relatively short time, Mr. Peter stated.

"The best place to store fertilizer is in the soil," emphasized Mr. Peter. However, much must be stored in warehouses and other structures, he said. This requires skilled labor and costly facilities. One way to ease this problem is to encourage farmers to store more fertilizer in buildings on their land. By doing this they could take some of the storage burden off dealers.

Mr. Peter made several recommendations for handling and storing fertilizer.

Solid fertilizer is sold bulk or in bags. A mistake some people make, said Mr. Peter, is thinking that all you need to store bulk fertilizer is a building. To store and handle bulk fertilizer you need good storage facilities, trucks, conveyors, and specialized equipment.

A tip to make handling of the bags easier, said Mr. Peter, is to wear rubber gloves. The bags are often slippery. A clean building with a good roof and a dry floor is needed to store bagged fertilizer. Not more than eight bags should be put in a stack. The bags should be stacked neatly, with room for air to get to every bag. Keep fertilizer away from animals and children, Mr. Peter advised.

There are special problems in storing ammonium nitrate, he said. It is inflammable and hygroscopic so it must be kept away from heat, flames and moisture. Empty bags should be burned in a safe place and not allowed to lay around buildings.

The newer forms of fertilizer, liquid and gas, also require special equipment and handling, Mr. Peter reported. Solutions are corrosive and may build up pressure when stored. A special tank made of aluminum or lined with rubber is needed to store the liquid forms. Valves to keep pressure and vacuums from building up should be installed in the tanks, Mr. Peter told the group. Anhydrous ammonia, a gas, has to be stored in tanks that will withstand 265 lb. of pressure.

These newer forms are not dangerous but must be handled with care, Mr. Peter warned. You should use rubber gloves, a gas mask, and keep plenty of water handy when handling them, he advised.

M. H. McVickar, chief of agronomic education, National Plant Food Institute, discussed fertilizer trends and outlooks with the dealers. He gave two reasons for the tremendous increase in the use of fertilizer—agricultural colleges are educating farmers about the benefits of fertilizers and fertilizer prices have remained relatively constant. While other costs have risen 200 to 300%, the cost of fertilizer has gone up only 58%, he said.

"When considering the use of fertilizer it is logical to first consider soils," stated George Buntley, associate agronomist at the college. He pointed out that before we can recommend what to put on the soil we must first know what the soil needs.

Mr. Buntley told the group how different soils in the area are formed. It is this difference in soils that gives rise to problems in management, he said.

How does fertilizer affect quality in grains and forage? Total growth and total protein increase at about

(Continued on page 21)

AT SOUTH DAKOTA MEETING—Fertilizer consumption has risen rapidly since 1940. Here Kasper Peter, assistant division manager of fertilizers for the Phillips Petroleum Co., points out graphically to M. H. McVickar, chief of agronomic education, National Plant Food Institute (center) and I. B. Johnson, director of the South Dakota State College Experiment Station, this increase. Mr. Peter and Mr. McVickar addressed the Sixth Annual Dealers Fertilizer Short Course Dec. 2 at South Dakota State College. Mr. Johnson presided over the afternoon session.

C. D. Fischer and M. J. Siciliano in New Posts with Crag

NEW YORK—C. D. Fischer, le above, and M. J. Siciliano, right, hav been appointed to new positions i the Crag Agricultural Chemicals D vision of Carbide and Carbon Chem icals Co., a Division of Union Carbid & Carbon Corp., according to an an nouncement by Dr. R. H. Wellma division manager.

Mr. Fischer has been named a sistant to the manager of the divisio Mr. Siciliano has been appointed pro uct manager in charge of sales.

Awards Presented to Bes Appearing Packages at CSMA New York Meetin

NEW YORK — That considerab work needs to be done in the contr of livestock insects before such co trols are fully effective was the co tention of A. W. Linquist, Ent mology Research Branch, U. S. D partment of Agriculture, who spok Dec. 6 before the insecticide divisio Chemical Specialties Manufacture Assn., during CSMA's 42nd annu meeting here Dec. 5-7.

He noted that the Federal Gov ernment spent up to 10 times th amount of money in controllin plant pests as was devoted to live stock pests, despite the fact tha plant values run $12-14 billion year in comparison with $18-2 billion for livestock values.

CSMA's Grand Award for the be package among 150 entries in its 19 aerosol contest went to Sears, Ro buck & Co.'s floral insecticide produ "Cross Country Rose and Flor Spray." It was also named the be package among 40 entered in the i secticide classification.

Results of E. I. du Pont d Nemours & Co.'s recently complete nationwide survey on aerosol mar keting were reported at CSMA meeting. Insecticides, room deodor ants and hair sprays topped the lis of most frequently purchased aero sol products. The survey indicate that 91 to 100 families have pur chased one or more of a hundre different types of home aids no available in the aerosol packag

Elected president of CSMA f 1956 was Dr. Emil G. Klarmann, vi president of Lehn & Fink Produc Corp. Harry E. Peterson, Peters Filling and Packing Corp., was elect first vice president and James Ferris, Niagara-Alkali Co., w elected second vice president. R elected were P. C. Reilly, Reilly T and Chemical Corp., treasurer, a Dr. H. W. Hamilton, Montclair, N secretary.

OLD TIMERS AWARDED

PAINESVILLE, OHIO — Diamo Alkali Co. recently awarded diamon shaped pins to 353 employees who years of service ranged up to years with the company. The Pain ville Works is the Diamond compan oldest and largest facility.

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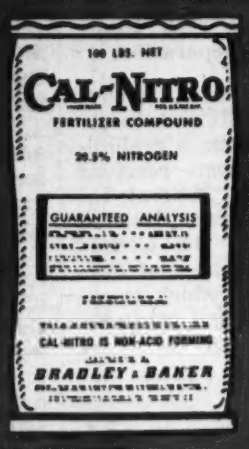

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F. E. Richardson

James D. Merrill

F. E. Richardson, James D. Merrill Named by Velsicol

CHICAGO — Two appointments have been announced by Velsicol Chemical Corp.

F. E. Richardson has been named assistant manager of the firm's Memphis plant, according to W. K. McCready, director of manufacturing for the firm. L. E. Carls, advertising manager, has announced the appointment of James D. Merrill to the advertising staff.

Mr. Richardson joined Velsicol in 1948 with a background of 12 years of varied engineering experience. Previous to his new assignment, he was chief engineer at the Memphis plant in charge of expansion design and construction projects.

The Velsicol Memphis plant produces technical heptachlor and endrin insecticides along with such chemical products as chlorine, caustic soda, hydrogen and sodium hypochlorite. The company also has a plant at Marshall, Ill., with headquarters and laboratories at Chicago.

Mr. Merrill will assist in planning and carrying out the various publicity, advertising and sales promotion programs. He holds a B.S. in business administration from Northwestern University and comes to the Velsicol organization from Stewart-Warner Corp. where he engaged in various sales promotion activities.

Census of Minerals Shows Threefold Advance in Phosphate Rock Output

WASHINGTON, D.C.—Tremendous strides have been taken by the phosphate rock industry during the past 15 years, according to the preliminary report of the 1954 census of mineral industries just issued by the U.S. Department of Commerce. This was the first such census taken of the mineral industries since 1939.

Net shipments of phosphate rock in 1954 were 13 million tons, the census reports; a figure over three times as large as production in 1939. Employment increased by almost one-half between 1939 and 1954, while the horsepower of power equipment available in 1954 was more than three times as great as 15 years previously.

Establishments primarily producing phosphate rock in 1954 were located in six states, but about three-quarters of all net shipments of phosphate rock were from Florida. The other producing states in order of net shipments were Tennessee, Idaho, Montana, Wyoming and Utah. Imports of phosphate rock in 1954 amounted to 122 thousand long tons valued at $3.1 million, most of which was imported from Curacao.

Of shipments made in 1954, about 80% represented dried rock, about 15% was crude ore or matrix and only about 5% was in the form of washed rock. Over 95% of all crude phosphate ore produced in 1954 was prepared by crushing, grinding, milling, sizing, washing, flotation, drying, calcining, nodulizing, or defluorinating. Nearly all of the Florida rock was prepared, whereas less than half of the rock from other states received preparation.

The Department of Commerce says that the statistics contained in its report were derived from a preliminary tabulation of reports received in the 1954 Census of Mineral Industries. Final and more detailed figures will appear in the Census bulletin entitled "Chemical and Fertilizer Mineral Mining," which is expected to be published and available later.

The 1954 census of mineral industries is the thirteenth such census of the United States. Prior to 1939, mineral censuses had been conducted at about ten-year intervals for a century. Present legislation provides for such a census every five years, however.

PRINCIPAL STATISTICS FOR THE PHOSPHATE ROCK INDUSTRY IN THE UNITED STATES: 1954, 1939, 1929 and 1919

(Excludes establishments for 1954 with value of production and with expenditures less than $500; for 1939 and 1929, less than $2,500; and for 1919, less than $500 for value of production and less than $5,000 for cost of development.)

Item	1954	1939	1929	1919
Net shipments of phosphate rock, 1,000 long tons*	13,366	3,958	3,829	1,989
Value of shipments, $1,000	†117,853	‡12,286	‡13,044	‡10,300
Value added in mining, $1,000¶	62,020	9,003	9,497	6,155
Number of employees, total§	5,439	3,754	3,506	4,747
Production and development workers	4,578	3,372	3,201	4,373
All other employees	861	382	305	374
Man-hours worked by production and development workers, 1,000	10,127	6,680	(NA)	(NA)
Principal expenses, total $1,000	$0,542	7,012	7,629	8,807
Wages of production and development workers, $1,000	17,087	2,871	3,304	3,901
Salaries of all other employees, $1,000	4,440	858	778	761
Supplies, $1,000	11,916	1,503	1,543	2,162
Phosphate rock received for preparation, $1,000	35,393	(NA)	(NA)	(NA)
Fuel, $1,000	3,364	826	891	1,740
Purchased electric energy, $1,000	5,507	931	1,092	79
Contract work, $1,000	2,835	23	21	164
Purchased machinery installed, $1,000	8,156	(NA)	(NA)	(NA)
Capital expenditures (development work, construction, machinery and equipment), $1,000	11,338	(NA)	(NA)	(NA)
For machinery and equipment only, $1,000	7,771	470	805	(NA)
Horsepower rating of power equipment, 1,000**	356	113	104	50
Water intake, 1,000,000 gal.††	62,618	(NA)	(NA)	(NA)

(NA)—Not available.

*For 1954, represents net shipments of crude, washed, and dried phosphate rock. Net shipments are "Shipments and inter-plant transfers" less "Receipts from other establishments for preparation." For 1939, represents production of washed phosphate rock and crude phosphate rock mined but not prepared in that year; for 1929 and 1919, represents phosphate rock mined.

†Represents value of phosphate rock shipped to establishments outside of the "Phosphate rock industry"; value of phosphate rock shipped to other establishments in the "Phosphate rock industry"; value of secondary products; and receipts for services performed for others.

‡Represents value of production.

¶For 1954, represents value of products shipped plus capital expenditures less cost of supplies, phosphate rock received for preparation, fuel; purchasing electric energy, contract work, and purchased machinery installed; for 1939, 1929, and 1919, represents value of production less cost of supplies, fuel, purchased electric energy, and contract work.

§Represents the average of 12 monthly figures for the payroll ending nearest the 15th of each month.

**Represents the horsepower of all prime movers plus the horsepower of electric motors driven by purchased energy.

††Represents total water intake from publicly and privately owned systems, and mine water used for mineral preparation.

W. J. Murphy Dies, Was Executive of Potash Firm

MONTCLAIR, N.J. — William J. Murphy, 60, vice president in charge of sales and a director of American Potash and Chemical Corp., New York, died here Dec. 11 in Community Hospital.

Mr. Murphy began his career with the chemical firm as an office boy in 1911 at the age of 16. He worked in New York until 1917, at which time he was transferred to the firm's San Pedro, Cal., refinery. In 1919 he was sent to American Potash's Trona, Cal., plant in charge of shipping and order records. While at Trona, Mr. Murphy helped organize the Trona Athletic Club, forerunner of many varied recreational facilities now to be found there.

In 1920 Mr. Murphy rode in the caboose of the first train of potash shipped to the eastern markets.

He was appointed manager of borax sales in 1926 and eight years later was named general sales manager. In 1941 Mr. Murphy was elected vice president in charge of sales. He was made a director of the chemical firm in 1947. During World War II he was a member of four industry advisory committees to the agencies of the government.

At the time of his death, Mr. Murphy was a director of the National Plant Food Institute, the American Potash Institute and of the American Potash Export Assn. He was also a member of the Union League Club, New York City; Bel Air (Cal.) Beach Club, and Glen Ridge (N.J.) Country Club. He resided at 15 Columbus Ave., Glen Ridge, N.J.

Survivors include his wife, Marie Sullivan Murphy; two sons, William J., Jr., Wellesley, Mass., and Richard A. of Glen Ridge; a brother, sister and seven grandchildren.

LAND VALUE RISES

URBANA — Value of Illinois farm lands and buildings increased about 40% in the four and a half years between the census of April, 1950, and that of 1954. Figures compiled by C. L. Stewart of the University of Illinois department of agricultural economics show that the average price of land was $242 an acre at the time the 1954 census was taken. That's an increase of nearly $68 an acre from the 1950 census.

Louis H. Wilson Named Officer of National Group

CHICAGO—Louis H. Wilson, secretary and director of information of the National Plant Food Institute, Washington, D.C., has been elected vice president of the Agricultural Relations Council, an organization for those engaged in public relations work in agriculture and allied industries.

Sixty of the top agricultural public relations executives in the U.S. attended the annual meeting, which was held at the Conrad Hilton Hotel here early in December. The program was devoted to discussions of techniques of establishing better relations between rural and urban people.

John J. Lacey, public relations director (radio and press) for the American Farm Bureau Federation, Chicago, was elected president, succeeding Ed Lipscomb, director of public relations of the National Cotton Council. Lowell A. Kern, executive secretary, American Petroleum Institute, New York City, was re-elected secretary of the Council.

Weed Killers May Help to Control 'Hopper Numbers

WASHINGTON, D.C.—The migratory grasshopper, a predominant destructive species of the West, prefers hedge mustard to alfalfa as a diet, U.S. Department of Agriculture research shows. This fact, say department scientists, may be a clue to controlling grasshoppers by controlling weeds in large alfalfa areas.

Entomologists of USDA's Agricultural Research Service made laboratory studies at Tempe, Ariz., to determine the truth of early observations that alfalfa was the main cultivated food crop of the migratory 'hopper. Their research showed that this pest might not be able to maintain itself through many generations on alfalfa alone. Nymphs fed exclusively on alfalfa usually died before reaching adulthood. On this diet adults were much smaller, laid fewer eggs, and lived for a shorter period than did adults fed a more favorable diet.

Nutrient deficiency, rather than the presence of a harmful substance, appears to be the reason for the inability of alfalfa to serve as an exclusive food for the migratory grasshopper. The insect's growth, longevity, and egg production on diets containing hedge mustard and Johnson grass mixed with alfalfa were about the same as when it was fed hedge mustard or Johnson grass alone.

A diet of hedge mustard produced adult grasshoppers that were large and laid more eggs than those fed other foods. Adults reared exclusively on hedge mustard developed large bodies, with wings proportionally longer, resembling the destructive and highly migratory Rocky Mountain grasshopper, which at one time ravaged great areas of the West. The scientists believe that this weed either alone or supplemented by alfalfa and other plants, would furnish an adequate diet for development of the migratory grasshopper under field conditions.

Alfalfa produced the smallest adults of all food plants tested, which included hedge mustard, Johnson grass, nettle-leaf goosefoot, and mixtures of these weeds with alfalfa.

A diet of hedge mustard was preferred by nymphs over all other plants tested, and resulted in more than five times the survival rate that did alfalfa. Longevity was greatest for adults reared exclusively on hedge mustard, with alfalfa next. Most eggs were produced by females that had been fed a mixed diet including hedge mustard, alfalfa, and other plants. This diet resulted in nearly 15 times more eggs than were produced by female grasshoppers fed alfalfa alone.

DuPont Grants $900,000 to Improve Teaching Programs In College and University

WILMINGTON, DEL. — A fund of more than $900,000 has been allocated by E. I. duPont de Nemours & Co., Inc., for grants to universities and colleges in the company's annual program of aid to education. The announcement was made by the firm on Dec. 16. More than 100 educational institutions will be included in the program which is for the next academic year. The amount involved is a substantial increase over the $800,000 in gifts made for the present year.

The company states that all of the increase and nearly half of the entire new program are for the improvement of teaching in colleges, universities and in high schools. The grants will support science and mathematics as well as other subjects.

The growth as well as the change in emphasis in the company's effort reflects the changing needs of the schools. At the same time, grants for fellowships in science, which once made up the entire program, and for fundamental research are being continued, the company states.

"In the face of increasing student population at all levels, a paramount problem is to maintain the quality of teaching and at the same time develop enough teachers," Crawford H. Greenewalt, president of the Du Pont Company, said. "We hope our program will encourage more young men and women to go into teaching.

"In large part our grants are intended to advance the teaching of science and mathematics. These subjects are a vital part of liberal arts education as well as fundamental to the education of scientists and engineers. Moreover, the laboratory sciences are the most expensive to teach of all the basic courses in the colleges and universities."

The fund for aid to teaching totals $445,000, including $200,000 to aid undergraduate teaching in 50 privately supported colleges. Of this amount, $125,000 is for advancing the teaching of chemistry, supplemented by $75,000 to strengthen the teaching of other subjects important in the education of scientists and engineers. The grants for teaching chemistry have been in effect this year and are being renewed for next year. The supplementary grants are being given for the first time.

The company's program for the advanced training of high school teachers of science and mathematics is nearly doubled. Grants totaling $130,000 are provided for fellowships for active and prospective teachers for summer sessions and the next academic year. The company announced the award of 134 teachers' fellowships to eight institutions for the academic year.

Purpose of this is to help in-service teachers advance themselves and to encourage students in the universities to go into the teaching profession.

Du Pont has also expanded its grants for postgraduate teaching assistantships to $115,000. There are 30 of these grants, mostly in chemistry, and they are shared by 28 universities. Purpose is to improve instruction in the universities and to encourage postgraduate students to enter teaching careers.

Under its longer standing plans, the company is granting $270,000 to universities for fundamental research and $190,000 for postgraduate fellowships in science and engineering.

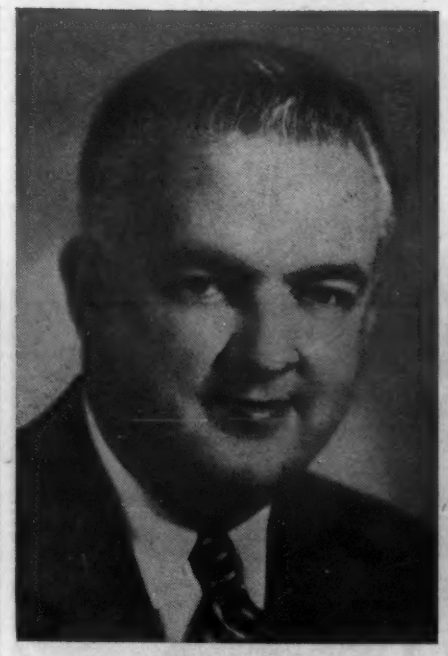
New England Harvests Excellent Apple Crop

BOSTON — New England apple growers harvested one of their best crops in years this season, 25% larger than normal. The will-o-the-wisp New England weather was good this fall sending heavy rains without damaging winds. Also favorable were the cold nights which added a handsome bloom to McIntosh just before harvest.

Apple growers in Massachusetts were not as fortunate last year when Hurricanes Carol and Edna struck a punishing blow knocking most of the apple crop off the trees.

John Chandler, executive vice president of the New York and New England Apple Institute, said: "Eighty per cent of our apples this year are fancy grade and that's something to talk about."

"Apples today are better because of improved production techniques. Our long, hard work during the growing season is paying off. Improved varieties, scientific orchard management and new marketing methods are pushing our apples to the top," he said.



M. G. Woodward

Southern Nitrogen Elects M. G. Woodward as Officer

NEW YORK — Election of M. G. Woodward as treasurer and assistant secretary of Southern Nitrogen Company, Inc., has been announced by John R. Riley, president. The new company is constructing a $14,000,000 petro-chemicals plant in Savannah, Georgia, to start the production, in early 1957, of 250 tons per day of nitrogen solutions for fertilizer use, and prilled ammonium nitrate for the trade.

Mr. Woodward, who will also serve as controller of Southern Nitrogen, was executive assistant to Nathan W. Levin, financial consultant to the heirs of Julius Rosenwald from 1952 to the present. Earlier, he served as financial assistant to Joseph P. Kennedy, former Ambassador to the Court of St. James, acting as treasurer and controller of various investment activities.

VELSICOL "PLANT WARMING"

MEMPHIS — Velsicol Chemical Corp. was host to about 250 college and U.S. Department of Agriculture entomologists and researchers at a tour of the firm's plant here Dec. 13. John Kirk, vice president in charge of sales, told the group that the affair was in the nature of a "plant warming." During the past fall, Velsicol doubled the size of its heptachlor unit and rebuilt its endrin plant at the Memphis site. After a tour of the plant, the group had dinner at the Chickasaw Country Club, where the guests included civic and government dignitaries from the City of Memphis.

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C. E. Millar, Professor Emeritus of Soil Science, Michigan State College.
A fundamental treatment of the principles of fertility in the soil, with major emphasis on the plant itself. Relevant aspects of soil chemistry, soil physics, soil microbiology and plant physiology from viewpoint of their influence on plant growth. Each major plant food element and the more important micro-nutrients fully treated with respect to supply in the soil, sources and amounts of additions, losses from the soil, functions in plant growth and plant symptoms of deficiency. Covers all sections, with considerable space to saline soils and soils of southern latitudes **$6.75**

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Presents a comprehensive picture of the chemical aspects of soils in relation to their development, present constitution and the uses to which they are put. Covers: chemical composition, soil, colloids, organic matter relationships, oxidation-reduction phenomena, acid, alkaline and saline soils, plant nutrition, nutrient fixation, trace element chemistry, root and soil relationships. Scientists engaged in soil research will find useful data directly applicable to their investigations. Food chemists, manufacturers and those manufacturing liming materials, fertilizers, soil conditioners, surfactants, wetting agents, insecticides, fungicides and other agricultural chemicals will gain new ideas for future product research and development. 384 pages **$8.75**

SOILS AND SOIL MANAGEMENT
A. F. Gustafson
A complete study of soils; physical properties, soil organisms, organic matter, relation of water, control of water, tillage, erosion, acidity and its control by liming, management of alkali soils, nitrogen and its importance to the farmer, production, conservation and utilization of farm manures, production and utilization of green manure crops; fertilizer materials and their effects on soils; crop rotations; fertilization and long-term maintenance of productivity of mineral soils. Published 1941. 424 pages, illustrated **$6.00**

SOIL SCIENCE SIMPLIFIED
Helmut Kohnke
A concise textbook dealing with basic concepts of soils. Much useful information for students in agriculture, farmers, fertilizer salesmen, etc. 68 pages, paper bound **$1.00**

IRRIGATED SOILS: Their Fertility and Management—New 1954—Second Edition
D. W. Thorne and H. B. Peterson, Department of Agronomy, Utah State Agricultural College. Dr. Thorne is also Chief of Soils and Fertilizer Research Branch, Tennessee Valley Authority.
An outstanding text dealing with the problems of irrigated regions. In addition to the chapters dealing with irrigation, the salt problem, reclamation of saline and alkali soils, there are chapters on maintaining organic matter in soil, minerals and plant growth, fertilizer elements and fertilizer materials, using fertilizers, soil management for general field crops, for fruit, vegetable and specialty crops **$6.50**

THE RESPONSE OF CROPS AND SOILS TO FERTILIZERS AND MANURES (1954)
W. B. Andrews
A new book, with special reference to Anhydrous Ammonia and other sources of nitrogen in liquid form. Deals also with legumes as a source of soil nitrogen, and the uncertainty of green manures; the response of soil to phosphorus, potash and soda; the effect of fertilizers on yield and feeding value of hay and pasture crops. 468 pages, 19 chapters, 89 illustrations **$4.50**

CHEMICALS, HUMUS AND THE SOIL
Donald P. Hopkins
The theme of the book is the necessity of chemical fertilizers to maintain the fertility of the soil. It has concise information on which soil conditions and which chemical fertilizers are most suited for special crops and vegetables. Space is devoted to cereal crops, barley, wheat, oats and rye; to roots and tubers, sugar beets, potatoes, carrots, parsnips and turnips; to vegetable crops, beans, peas, alfalfa, lupines; to grasses and clovers; to onions, flax, kale, cabbages, lettuce, tomatoes, celery, cauliflower and fruits. It clarifies the relationship of manures, compost and chemicals as fertilizers and points out how chemicals should be used to obtain the best results. Its philosophical soundness and logic should do much to avert the confusion of thought introduced by the advocates of compost and manure as against the use of chemical fertilizers **$8.50**

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AT NORTH DAKOTA MEETING—Shown above are scenes at the recent conference of fertilizer dealers held at North Dakota Agricultural College in Fargo. In the top photo are, from left to right, front row, Roy Howe, Howe, Inc., Minneapolis; C. W. Lewis, North Dakota Mill and Elevator, Grand Forks; W. P. MacDonald, F. H. Peavey & Co., Minneapolis; back row, W. H. Rasmussen, Summers Fertilizer Co., Grand Forks; Jim Menn, USI, Madison, Wis., and Walt Pyle and Ernie Kuebler, Goldena Mills, West Fargo. In the bottom photo, front row, left to right, are L. M. Bond, Anaconda Copper Co., Moorhead, Minn.; Dick Bresnahan, Casselton (N.D.) Elevator Co.; George Bresnahan, Casselton (N.D.) Elevator Co.; Dave Williams, Peavey Elevator Co. fertilizer department, Moorhead, Minn.; Val C. Gores, Fargo Loan Agency, Fargo; Ray Volk, Minnesota Farm Bureau Service Co., Moorhead; back row, George Failes, Farmers Union Central Exchange, St. Paul, and Joe and Al Burgum, Farmers Elevator, Arthur.

Use of Fertilizer-Pesticide Mixtures Discussed at North Dakota Conference for Dealers

FARGO—A big percentage increase in the sale of fertilizer-pesticide mixtures was reported to about 150 attending the seventh annual conference of fertilizer dealers at North Dakota Agricultural College here recently.

Dr. M. H. McVickar, chief of agronomic education, National Plant Food Institute, Washington, told the group that sale of mixtures in the state increased 700% from 1952-53 to 1953-54.

Very little of this was fertilizer-weed killer; most was fertilizer-insect killer, he said.

Dr. John Callenbach, head of entomology at North Dakota Agricultural College, pointed to the limited research done on mixtures. He said that not all insecticides are compatible with fertilizers. His greatest concern is in regard to the extremely large number of insecticide formulations and the variety of forms in which these insect killers are available, he said.

The North Dakota entomologist sees difficulties in obtaining mixtures in which the insecticide strength of the mixture with fertilizer is in the righ proportion to do the specific job desired. He stressed that "no one insecticide can kill all bugs" and posed the question: "What is control aimed at?"

For instance, a mixture might accomplish the desired insect control when the material is broadcast but might fail entirely as a band application, he said. Dr. Callenbach stressed, too, the physical hazards of applying fertilizers when mixed with the poisonous insecticides. He said he feared that many farmers, to keep their costs down, might tend to reduce their applications of the mixtures to the point where their effectiveness in insect control might be of little value.

In North Dakota studies the most encouraging results in the use of combined fertilizer-insecticide applications have been in a limited light soil area in Walsh and Pembina counties for the control of the sugar beet root maggot.

Dr. J. C. Zubriski, doing soils research with the North Dakota Experiment Station, reported on trials to determine the effects of fertilizers, placement of fertilizers and plant populations (stalks to the hill) on the yield of corn grain.

This work is being done in the southeastern corner of North Dakota, the state's principal corn area.

"Preliminary results," Dr. Zubriski said, "indicate that phosphorus, or nitrogen and phosphorus, applied to the hill will give profitable yield increases in many instances.

"A plow down treatment of nitrogen and phosphorus, or a combination of plow down treatment and hill application, will generally produce still larger yield increases, particularly when moisture conditions are favorable."

Dr. Zubriski exp'ained that the corn research brought out this point clearly—larger plant populations appear to be necessary for obtaining the largest possible yields of corn. However, he believes further research must be conducted to evaluate the effect of plant populations and fertilizers upon yield of corn.

More information, Dr. Zubriski says, has now been obtained on the relationship of soil moisture to the effectiveness of fertilizers.

Experiments have been established the past four years at the branch experiment stations in North Dakota to determine the effect of fertilizers upon soil moisture utilization by small grains. Data obtained from these tests revealed that the moisture content of the soil profile at harvest time was not influenced by fertilizer applications. This was true even when nitrogen in addition to phosphorus was applied at 70 lb. per acre on nonfallow land.

"Fertilizers, however, increased yields and advanced the maturity of the crop. The advancement in maturity caused correspondingly earlier utilization of moisture from the soil profile," Dr. Zubriski said.

Another North Dakota Agricultural College soils authority, Dr. R. A. Young, stated that "North Dakota farmers can profitably use several times as much nitrogen fertilizer as they are now using."

Dr. Young explained that most crops grown on fallow are supplied with enough or nearly enough available nitrogen for good results. But—the great need for nitrogen fertilizer is for crops grown on "old" land.

The form of the available nitrogen, whether solid, liquid or gas, is not the important thing, in Dr. Young's estimation. The important point is to apply the nitrogen properly.

Results of North Dakota experiments with nitrogen fertilizer were summarized as follows:

(1) Small grains grown on nonfallow may use profitably 20 to 5 or more pounds of nitrogen fertiliz per acre. The average may be u to 30 lb.

(2) Potatoes on cropland may nee 60 lb. or more of fertilizer nitroge per acre.

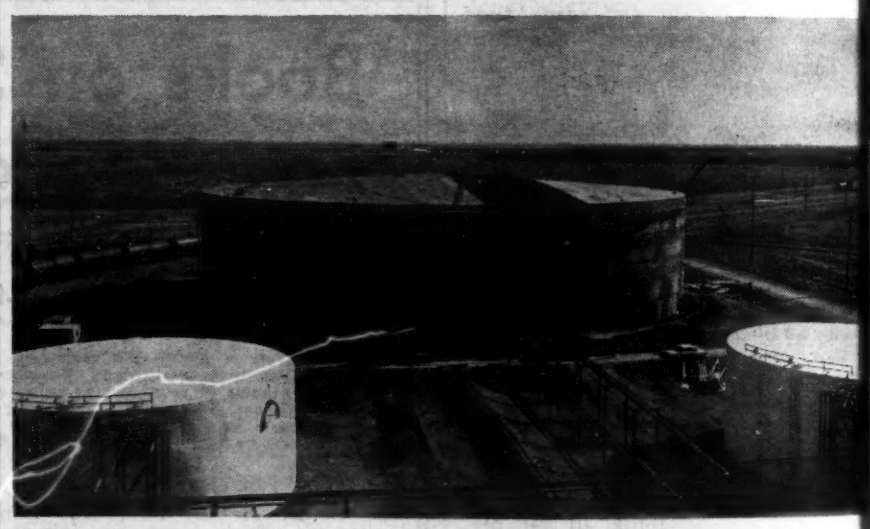
(3) Grasses need 100 lb. per acr of nitrogen fertilizer.

(4) Heavy rates of nitrogen ar required to give an appreciable in crease in the protein content of whea and test weight often is decrease slightly in the process.

Dr. Young concluded by pointing out that summer fallow acreage in the state can be reduced somewhat if the use of nitrogen fertilizer was increased, but improved weed control practices are needed along with any change of this kind.

Speakers at the session, in addi tion to the several quoted, include Dr. E. B. Norum, head of the Nort Dakota Agricultural College soil work; Armand Bauer, supervisor o the soil testing laboratory in Nort Dakota's soil testing program; R. E Widdifield, agronomist, and V. L Weiser, soils specialist, both of th State Extension Service. The latte two speakers discussed the educa tional program on crops and soils be ing carried on throughout the stat by the Extension Service.

Three half-day conferences fo dealers, where information similar t that presented in the Fargo confer ence is being detailed, were held a Williston Dec. 8, Mandan Dec. 9, an Devils Lake Dec. 12.



AQUA AMMONIA TANK NEARS COMPLETION—One of the largest steel tanks in the world, a 323,000-barrel aqua ammonia storage tank, nears completion by Phillips Chemical Co. The facility is adjacent to the firm's Cactus plant near Etter, in the Texas Panhandle. The tank is expected to enable Phillips to provide its customers with adequate supplies for both fall and spring soil application. Nearly an acre of ground is covered by the tank which is 48 ft. high and 220 ft. across.

Phillips Erecting Huge Steel Tank For Aqua Ammonia

BARTLESVILLE, OKLA.—A 323,000-barrel aqua ammonia storage tank, being erected by Phillips Chemical Co., is nearing completion. Said to be one of the largest steel tanks in the world, the facility is located adjacent to the firm's Cactus plant near Etter, Texas. Phillips Chemical Co., a wholly-owned subsidiary of Phillips Petroleum Co., produces ammonia, ammonium nitrate fertilizer and nitrogen solutions at the Cactus plant.

The company states that although fall use of ammonia as a fertilizer is on the increase, spring demand is still greater. Thus, summer and winter storage of aqua ammonia in tanks of this type is expected to help provide customers with adequate supplies at times when the material is most needed.

Aqua ammonia is sold for direct application to the soil in the agricultural areas near production points. Ammonia is recovered from the remainder of the stored material for shipment into more distant agricultural areas.

Fall application of ammonia, which has many advantages over spring usage, is receiving greater stress and further eases problems of seasonal supply.

When construction is completed late this month, Phillips' new atmospheric pressure storage tank will be the largest ever built for the storage of aqua ammonia. It will increase Phillips' above and underground storage facilities for ammonia and aqua ammonia to almost 1,000,000 bbl., thus helping the company to maintain plant production and fill customers' orders on even schedules.

WEED DISTRICT PLANNED

WELLINGTON, TEXAS—A weed control district is planned for Collingsworth County, according to J. W. Thomas, county agent. He says the bindweed infestation is spotted over the county, however there are a few fields where the infestation is already serious.

NEW RESEARCH CENTER—An architect's drawing of the new research center of the Spencer Chemical Co. to be built in suburban Kansas City is shown above. The 34,000 square foot structure to be built of brick will be completed early in 1957.

Spencer to Erect New Research Center on Kansas City Suburban Site, Company Says

KANSAS CITY — A new chemical research center for Spencer Chemical Company will be erected in suburban Kansas City, the company has announced. The new center should be completed by the spring of 1957 at which time it will be devoted to the research and development of new and improved products in the general fields of agricultural and industrial chemicals and plastics.

Kenneth A. Spencer, president of the company, indicated that the center, located on a 40 acre site, will initially employ 100 to 125 persons, who will be under the direction of Dr. John R. Brown, Jr., managing director of research and development. About half of these people will be professionally trained chemists and engineers, and the balance technicians and clerical help. Mr. Spencer said further that following the experience of the chemical industry, future growth of the company and expansion of these research facilities might bring the total personnel to 150 or 200 in five to 10 years.

The location of the center in Kansas City is in keeping with the policy of centralizing various company functions in Kansas City where the firm maintains its general offices. At the present time, the chemical research laboratories are located at Spencer's Jayhawk Works, twenty miles south of Pittsburg, Kansas.

The initial building to be erected will be a main chemical research laboratory building, a process development pilot plant, and later an experimental greenhouse, together with associated automobile parking lots, access roads, and ultilities. The main research laboratory will be a two-story brick structure containing 34,000 square feet. It will house research laboratories, a technical library, offices and related facilities.

New Practices Help Michigan Farmer Win Corn Growing Contest

ALMONT, MICH. — By using new practices recommended by Michigan State University, Lewis Spencer of Almont Township won the area's corn growing contest with a yield of 120 bu. per acre. Mr. Spencer topped 51 other entries in this contest between Almont Township farmers in the "thumb area" of Michigan.

To win the award offered by the Almont Lions Club, Mr. Spencer:

Plowed under 200 lb. of ammonium nitrate per acre; plowed with clod buster behind the plow and planted immediately—a practice recommended to save costs; applied 320 lb. of 12-12-12 fertilizer per acre at planting time, and planted seed thick enough to have 16,000 plants per acre at harvest time, using "large round" seed.

Albert T. Hall, township agricultural agent, said Mr. Spencer was one of the first farmers in Lapeer County to follow the new corn-growing practices recommended by Michigan State. And Mr. Spencer's costs were the lowest of the 52 entries.

CSC DIVIDEND

NEW YORK—A dividend of 25¢ per share was declared Nov. 28 on the outstanding common stock of Commercial Solvents Corp., payable Dec. 28, 1955, to stockholders of record at the close of business on Dec. 9, 1955. Previous payment was 25¢ per share on Sept. 30, 1955.

Growth of Importance Of Texas Aerial Operators Traced

RIO HONDO, TEXAS — Joe E. Jones, retiring president of the Texas Aerial Applicators Assn. has been succeeded by Ralph Crosnoe of Texarkana. In briefly reviewing the history of the association, Mr. Jones said it was set up five years ago in the Rio Grande Valley. Since that time the growth has been very rapid until now it is statewide, containing six regions with each region being represented by a vice president.

One task of the association has been in trying to weed out the irresponsible fly-by-night operator. It also works in close cooperation with Texas A&M College in securing more pilots, which are in short supply. In trying to learn more about the various insecticides and other chemicals used, the organization cooperates with both the college and the entomologists of the large chemical factories.

Mr. Jones said the crop duster had become an integral part of southwestern agriculture, and was engaged in a half dozen types of aerial application. This includes dusting for insects, spreading fertilizer, brush control, range seeding and other jobs which were being created by the fast-growing agricultural chemical industry.

The Texas association is the largest of its kind in the nation, Mr. Jones said, with California being in second place.

Irrigation to Expand in Oregon, Water Experts Say

CORVALLIS, ORE. — Oregon's irrigated acreage will more than double in the next half century, a group of Oregon State college agricultural water resource experts has predicted. The group figures the number of irrigated acres will jump from the 1,367,707 total of 1950 to 2,833,877 by the year 2000.

Increases will be largest in the Coast, Willamette Valley and Columbia Basin areas. Compared to 1950, the group estimates irrigation acreage by 2000 will increase almost 10 times in the Willamette Valley, almost 5 times along the Coast, 4½ times in the Columbia Basin, nearly double in Southern Oregon, a half in the Blue Mountain area, and a fifth in Central and Southeastern Oregon.

Dr. George S. Fraps Dies, Was Texas State Chemist

COLLEGE STATION, TEXAS—Dr. George S. Fraps, 79, who had been associated with Texas Agricultural Experiment Station for 42 years, died recently here following a long illness.

At the start of his career with Texas A&M College in 1903, Dr. Fraps was chief of the division of chemistry. Through his years of teaching, he emphasized the value of knowledge about the chemical nature of soils and was a leading figure in the soils and fertilizer phases of the station's activity.

His interests included the regulation of manufacture and sale of commercial fertilizers and feedstuffs. As state chemist, he guided the formulation of regulations to govern distribution of fertilizers and use of various grades in Texas.

A native of North Carolina, he held degrees from N. C. State College and Johns Hopkins University.

Books on Pesticides

WEEDS—Second Edition (1955)

W. C. Muenscher

Entire book has been revised and reset, with descriptions of seventy weeds added to the original list of five hundred, plus twelve new full-page plates depicting nineteen kinds. Keys and full descriptions provided for identification with detailed illustrations of 331. Types and sources of weeds, their means of reproduction and dissemination, and the amount of damage they inflict on crops. Specific directions for control, with reference to chemical methods of recent discovery $10.00

CHEMICAL BUSINESS HANDBOOK

Dr. John H. Perry

1,300 double column pages, the equivalent of several average books; 700 illustrations, by 124 contributors. Market research data section is 280 pages, business mathematics 200 pages, financial and accounting 142 pages, research and development 150 pages, sales and advertising 92 pages, twenty sections in all. The book deals with chemical management problems and is useful to technical men, engineers and executives, in the chemical and allied fields. Dr. Perry is editor of the Chemical Engineers Handbook, a companion publication $17.00

DDT and NEWER PERSISTENT INSECTICIDES

T. F. West and G. A. Campbell

The first and major part of book is devoted to the physical and chemical properties, manufacture, formulation and applications of DDT. The second part deals with other chlorinated hydrocarbons whose insecticidal properties have been discovered recently and compares these new insecticides with DDT. The preparation of aqueous suspensions, solutions, emulsions, and dusts containing DDT, the compatability of DDT with other insecticides, fungicides and additions are covered in detail. Contains dozens of tables on the solubility of DDT in various solvents, the catalytic activity of accessory substances in the presence of DDT, analogues of DDT, the comparative toxicity, hydrolysis and solubility of DDT analogues, the toxicity of DDT for almost all important insects, etc. Many illustrations $8.50

APPLIED ENTOMOLOGY, Fifth Edition

H. T. Fernald and Harold H. Shepard

This text since 1921 has had an outstanding record of usefulness. The Fifth Edition preserves the general organization and coverage, with changes to improve the presentation and to incorporate new knowledge. Contains chapters on anatomy, physiology and development. The economic importance and control of insects are discussed in a general way with much attention to insecticides. The classification of insects is emphasized, with examples drawn from species conspicuous for being very harmful or decidedly beneficial. Specific control measure included for injurious forms. Last chapter considers other pest animals closely related to insects. 385 pages $7.00

THE CHEMISTRY AND ACTION OF INSECTICIDES

Harold H. Shepard, Entomologist, U. S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University.

Treats the chemistry of insecticides, the history of their use, their commercial importance here and abroad, the nature of the major uses, the influence of environment on effectiveness. Materials are arranged according to their chemical relationships. Two chapters relating to organic compounds largely new as insecticides. Illustrative data in form of tables, and a convenient appendix of equivalents arranged for practical use in the field. 504 pages $7.00

WEED CONTROL

W. W. Robbins, A. S. Crafts, and R. N. Raynor

A textbook-manual presenting a modern view of the rapidly developing field of chemical weed control. Reports in detail the research on which most modern herbicide usage is based. Weeds, their reproduction, prevention, biological control, chemicals in weed control. Herbicides, foliage contact applications, hormone-like substances, root applications, evaluations of combinations of chemical applications. Weeds of grasslands and turf. Special weed problems, cropped and uncropped areas. Published 1952. 503 pages, 155 illustrations $8.00

INSECT, FUNGUS AND WEED CONTROL

Dr. E. R. de Ong

The information is grouped according to field of application rather than to chemical composition or nomenclature. Chapters on insecticide label, seed disinfectants, herbicides, forest insects and diseases, livestock insects, and the pests found in household and industry. Fumigation of warehouses, residual sprays and preservatives for fruits, vegetables and wood products are covered. An up-to-date guide on pest control with the needs of operators, agricultural and structural specialists carefully considered. Shippers and warehouse personnel will find the book useful..... $10.00

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NITROGEN

(Continued from page 1)

Since this must be sold, Aikman considers that lower prices are probable in the next few months.

In Europe, increased capacity of existing plants has raised annual production in western Germany to 975,000 tons of pure nitrogen. In other European countries, including the U.K., and in South Africa and eastern countries, new plants are being planned. New producers are also coming into production in the U.S.

Aikman estimates that in 1956-57 world production is likely to be in the region of 980,000 tons more than in 1955-56 with a further increase of 760,000 tons slated in 1957-58.

Consumption in Europe and Egypt rose by about 8¼% in 1954-55, and another rise of 4¼% is expected in the current year. Aikman comments that the American demand from industry more than made up for a fall in demand for fertilizers owing to the severe drouth. The over-all increase in U.S. consumption was about 13%. For 1955-56 present estimates point to an increase in the U.S. of about 6%. Fertilizer demands will increase by 5% while supplies for military and industrial purposes are expected to go up 8%.

NAC STATEMENT

(Continued from page 1)

kept for the industry, but based on production records. The Department of Agriculture estimates that sales in 1955 will reach $200,000,000 at the basic manufacturers level. This would mean that sales at the farm level for the year will range from $300,000,000 to $350,000,000.

Exports, which are shaping up as an expanding outlet for many pesticides, continue on an upward curve in 1955. Exports during the first six months of the year were 34% over those in the same period in 1954. Total exports for the year are expected to top $80,000,000, an increase of 60% since 1953.

Overseas use of pesticides is being spurred by the need to increase available food supplies and by an increase in public health programs to wipe out diseases such as malaria and typhus which are insect-borne.

While North America remained the largest export market dollar-wise, large increases in exports during 1955 went to India—exports up 250%; to the Philippines—exports up 200%; to Africa—exports up 80%; and to Europe—exports up 41%.

	1954—8 Mo.	1955—8 Mo.
BHC	51,206,000	36,063,000
DDT	66,603,000	82,339,000
2,4-D*	30,215,000	38,142,000
Copper sulfate† .	102,272,000	115,803,000
Lead arsenate ..	11,131,000	9,842,000

*Acid equivalent.
† 9 Mo. period.

Despite the increases in domestic sales and in exports in 1955, demand for pesticides has not yet caught up with available manufacturing capacity in the industry. The over-capacity built up during the period of rapid expansion from the end of World War II to the peak output year of 1951 still exists in a number of major products, NAC says.

Expanding domestic markets are expected to maintain the upward trend in sales volume for pesticides in 1956. One hopeful sign is that farmers are beginning to recognize that pest control chemicals can be used to cut unit costs of production—one means of easing the cost-price squeeze facing farmers today. Until recently, farmers looked at pesticides as defensive tools to be used to protect crops against insect or disease invasions, rather than as a means to cut unit costs of production.

Interest in pesticides also is developing as the result of the expanding federal and state road-building programs. Most of the projected highways call for wide, landscaped roadsides. It is becoming apparent that a growing volume of herbicides will be needed for the economical control of weeds along these roadsides which, in some cases, will amount to 27 acres per mile of highway. It is expected that insecticides will be needed to control insects and other chemicals will be used to regulate grass growth along roadsides.

Other expanding markets for pesticides foreseen by industry leaders include greater use of chemicals to control plant diseases which are causing an estimated loss of nearly $3 billion-per-year to the nation's crops, control of insects and other pests in connection with the government's grain sanitation program, control of insects and diseases which are causing great losses to standing timber, and control of soil insects and other soil-infesting pests which attack plant roots.

Experts at North Central Weed Conference Look for New Developments in Field

OMAHA — A prominent Omaha doctor told the North Central Weed Control Conference here Dec. 5-8 that weeds whose pollen causes hay fever should be treated as noxious weeds.

The suggestion was made by Dr. E. L. MacQuiddy, senior consultant in internal medicine at the University of Nebraska School of Medicine.

Dr. E. L. MacQuiddy said new weeds, such as Mexican fire bush, are showing up in the Midwest to add to allergy suffering. "Hay fever is an economic problem," the doctor said. "That is why I urge researchers to regard these weeds as noxious. They are as bad as those that damage crops."

Dr. Buford H. Grigsby of the department of botany at Michigan State University also urged more research work in his opening remarks.

Dr. Grigsby, 1955 president of NCWCC, pointed out that despite great success, 80% of the conference's problems still remain unsolved.

Two speakers said there remains a need for a more or less "foolproof" crabgrass control. Present methods have some drawbacks.

Dr. H. L. Lantz of Iowa State College said he would like a dry chemical that can be applied from a seed spreader before crabgrass comes up. Mixing of solutions is not for the average home owner, he said.

Dr. R. E. Nylund of the University of Minnesota declared he would like to see a chemical that kills crabgrass at any season of its growth. And the chemical should not injure bluegrass.

Both men pointed out that bluegrass comes back after being damaged by crabgrass killers. "But the average home owner doesn't like a chemical that turns his bluegrass brown," said Dr. Nylund.

Dr. Lantz said he was greatly impressed by the effect of arsenates but they tend to turn bluegrass brown. He emphasized that proper use of fertilizer is necessary to build up a thick turf that can compete with weeds.

The conference, with representatives from Nebraska, Iowa, Illinois, Indiana, Wisconsin, Minnesota and the Dakotas, covered everything from control of weeds in lawns to "use of herbicides in inducing regrowths of mountain maple for deer browse."

While the emphasis was on chemical controls, a check with some of the technical experts showed that the hoe is not going the way of the buggy whip.

Several of the experts admitted that the simple hoe will continue to be the principal weed control agent in their gardens and backyards.

"I still lean on the hoe," said Dr. Nylund. "Chemical weed controls are fine for the commercial grower but not for the average home gardener."

Dr. Grigsby said his garden kit wouldn't be complete without a good hoe and a file to keep it sharp.

Among those attending the conference was Dr. R. Milton Carleton, a garden expert whose column appears in many newspapers.

In an interview, Dr. Carleton said he was happy to have lived through the last 10 years, because "There has been more progress in chemical control than in all the history of horticulture," he said.

It was Dr. Carleton who 10 years ago wrote an article that boomed 2,4-D as a weed control. He estimated that the chemical controls now amount to a 100-million-dollar annual business.

Dr. Carleton predicted success next spring for a soil sterilant that should stop nematodes, an increasing problem for gardeners.

"Nematodes are a transparent organism, neither animal nor insect, which attacks root crops such as carrots," he said. "They cause knots and whiskery growths and they're spreading up from the South."

He said the sterilant is sprayed on the soil about 10 days before planting. "Unfortunately it does not destroy weed seed also," he said.

The conference elected E. A. Helgeson of the department of botany, North Dakota Agricultural College, as its new president.

Other new officers chosen were: Fred W. Slife, agronomy department, University of Illinois, vice president, and Dwight Lambert, Nebraska Department of Agriculture, secretary-treasurer.

TOURISTS DISTRIBUTE BUGS

SIKESTON, MO. — Missouri Agriculture Commissioner C. L. Carpenter, visiting here recently, said tourists would have been chief instruments in spreading the pink bollworm in Southeast Missouri except for three check stations.

"It is absolutely amazing how many tourists will pick cotton to take home with them as souvenirs," the commissioner said.

His remark followed the explanation that during the operation the three check stations at Arbyrd, Holland and Neelyville, the attendants had intercepted 46,426 cotton bolls, mostly carried by tourists.

In addition the three stations intercepted 280,039 cars; 19,412 trucks; examined 2,180 cotton picking crews; 7,989 cotton picking sacks, and made 4,211 interceptions of cotton being transported.

South Carolina Shipments

CLEMSON, S.C. — Fertilizer shipments in South Carolina totaled 26,346 tons in November and 27,987 tons in October, according to the state Department of Fertilizer Inspection and Analysis.

American Cyanamid Announces New Systemic Pesticide

MEMPHIS—A new systemic insecticide, "Thimet," was announced by American Cyanamid Company at the cotton production conference.

The company said this was the first systemic that could be applied effectively to seeds to enable the plants to kill insects that feed on them. It was formerly referred to as American Cyanamid 3911.

K. P. Ewing, of the cotton insect section, entomology research branch, U.S. Department of Agriculture, Beltsville, Md., discussed results of field tests with the new insecticide before a group of newspaper, magazine, radio and television writers at the Hotel Peabody here on Dec. 14.

Results of field and laboratory tests conducted this year may permit the limited marketing of Thimet to cotton seed dealers in Texas and Mississippi for treatment of cotton seed to be planted for the 1956 crop.

Research by state and federal agricultural scientists shows that when cotton seed is treated with "Thimet," the insecticide stays in the growing plant and continues to kill certain insects for periods up to nine weeks after the plant has come through the ground, Dr. Ewing explained.

Cyanamid estimates that at present production costs, the treatment of cotton seed with "Thimet" will add about $3 per acre to the cost of untreated seed. "Thimet" seed treatment, however, would replace two to three spray applications that cotton growers usually apply to growing plants to control aphids, thrips and mites.

In addition to cotton, both seed treatment and direct spraying tests have been conducted with promising results on corn, peas, beans, lettuce, beets, peanuts, potatoes, tree fruits and tobacco seedlings, it was announced.

The chemical name for "Thimet," originally designed as "experimental compound 3911," is O, O-diethyl S-ethylthiomethyl phosphorodithioate. It is a new member of the phosphate family of chemicals to which, through its research and development, Cyanamid has contributed thiophos, parathion and malathion.

Flying Farmers Drop in For Kansas Convention

WICHITA, KANSAS—Members of the National Flying Farmers from 11 states and one Canadian province were in attendance at a two-day meeting of the organization, held here at Hotel Lassen, Dec. 4-5.

"The airplane is the work-horse of the modern farmer," Fred Triplett, Ft. Worth, Texas, national president Flying Farmers, said in the opening address of the convention. "It can be used to detect soil erosion on the farm, check the watering of the cattle, spot down fences, locate livestock as well as make emergency trips when machinery breaks down, just as any farmer uses his pick-up truck."

The principal address was made by Sen. Frank Carlson (R., Kansas) at the closing banquet. He admitted the farm problem is a dark spot on the domestic picture and reviewed some of the details of the domestic parity bill which he submitted in Congress last June. The provisions of this program gave 100% parity on wheat consumed in the U.S., but permit the farmer to feed the wheat or sell it abroad. He handles his own surplus and takes care of his own losses.

COLORADO GROUP TO MEET

DENVER—The annual meeting of the Colorado Agricultural Chemical Assn. will be held Jan. 27 at the Cosmopolitan Hotel in Denver.

Special Retail Section

Better Selling

Richer Fields for Dealers

A SPECIAL CROPLIFE DEPARTMENT TO HELP RETAILERS IMPROVE MERCHANDISING KNOW-HOW

Herbicide Reports for 1955 Heard at Oregon Conference

SALEM, ORE. — An English-developed member of the 2,4-D family emerged as one of the most interesting new chemical weed killers at the recent annual Oregon Weed Conference here. Attendance of more than 225 farmers, industry representatives and scientists set a new record for the four-year-old conference.

Prospects that a new formulation of 2,4-D may solve some of Oregon's major weed problems in pastures and legume hay and seed crops were reported by W. R. Furtick, Oregon State college agronomist.

The researcher reported effective control of sour dock and other broadleaf weeds with "butyric acid formulations" of 2,4-D and MCP. The new formulation developed by a British scientist has the same weed-killing power as standard 2,4-D and MCP, but caused no apparent damage to legumes in one-year trials.

Even alfalfa seedlings were undamaged by spray applications that gave effective weed control, Mr. Furtick reports. Rates up to three pounds per acre of the new material caused no damage to either alfalfa or clover, but lotus seedlings showed some damage at the higher rate. A safe one-pound rate on lotus, however, controlled more than 90% of broadleaf weeds.

Three pounds of the material killed all dock in grass-legume pasture with only a temporary set-back to the pasture. Other main pasture weeds that researchers hope to control with the chemical include thistle and buttercup.

OSC agronomist D. O. Chilcote reported excellent control of Canada thistle with application of amino triazole (ATZ). Four to eight pounds of active acid of ATZ per acre were applied with 50 gal. water to thistle in the bloom stage or to thistle stubble. The chemical also shows promise for controlling certain brushy plants and Russian knapweed.

Wheat farmers were advised not to strive for maximum control of tarweed with 2,4-D at the risk of wheat injury. Dean Swan, OSC researcher at the Pendleton branch experiment station, reported "good weed control" with ½ to 1 lb. 2,4-D an acre with least damage to winter wheat when applied in the tiller-stage of wheat, usually in March or early April.

Although 15 to 20% better weed control was obtained with earlier spraying, Swan said it also resulted in 15 to 20% wheat yield reduction.

OSC experiments and farm trials with Karmex DW and Karmex W were reviewed by Furtick and Lyall Taylor, Corvallis, fieldmen for E. I. du Pont de Nemours & Co.

Furtick said two pounds of Karmex DW per acre in 30 gal. water controlled annual weedy grasses and broadleaf weeds in seed crops of bentgrass, alta fescue, Merion bluegrass, and creeping red fescue. He advised against applying it to bentgrass or creeping red fescue until stands are at least a year old. It may be applied to well-established seedlings of alta fescue and Merion.

The researcher recommended four pounds of Karmex DW per acre for removing velvet grass—a perennial—from bentgrass, alta fescue, and Merion bluegrass seed crops. He said it should be applied in October and at the four-pound rate only after crops are at least one year old. The chemical also appears promising for controlling weeds in alfalfa and lotus.

Taylor reported that early winter application of Karmex DW at two pounds an acre has given good control of winter annual weeds in red and black raspberries, boysenberries, nectarberries, and Evergreen blackberries. Weeds included chickweed, groundsel, and annual grasses.

Both Karmex W and DW have been effective in controlling annual weeds—such as pigweed, groundsel, lamb's quarter, and watergrass—in established fields of peppermint, Taylor stated, without injury to mint. Tests are still underway for possible effects on mint flavor.

Three-pound applications per acre after spring cultivation but prior to mint emergence normally give good weed control throughout the growing season, according to Taylor.

Use of chemical dormant sprays for weed control in strawberry fields was discussed by Frank Hofer, General Foods Corporation, Hillsboro, Oregon. Winter application of six pounds of actual IPC plus 1 to 1½ qt. dinitro in 10 gal. of oil (no water) caused little injury to strawberry plants with reasonable precautions, Hofer stated.

When injury has occurred, Hofer observed, it was due to spray applications too late in the season when the strawberry plants have started to break dormancy. He listed the following precautions:

1. Don't apply any dormant spray during freezing weather. (Light morning frosts, however, do not appear to cause damage.)
2. Apply early in the season during December if possible.
3. Use a machine calibrated to apply the correct amount and use custom-mixed material for good uniformity. Distribution of only 10 gal.

(Continued on page 11)

SHOP TALK OVER THE COUNTER FOR THE DEALER

By EMMET J. HOFFMAN
Croplife Merchandising Editor

You may have seen it before but the bit of inspiration and advice contained in the article, "The Customer," seems to have a way of reminding us how important the customer is in our business.

Reprinted on the back page of the fall issue of the VC News, publication of the Virginia-Carolina Chemical Corp., is the following bit of counsel about customers:

The customer is not dependent upon you—you are dependent on him.

The customer is not an interruption of your work—he is the purpose of it. You are not doing him a favor by serving him—he is doing you a favor by giving you the opportunity to do so.

The customer is not a rank outsider to your business—he is part of it.

The customer is not a cold statistic—he is a flesh-and-blood human being with feelings and emotions like your own, with prejudices and biases—even though he may have a deficiency of certain "vitamins" which you think important.

The customer is not someone to argue with or match wits against—nobody ever won an argument with a customer even though they may have thought they did.

The customer is a person who brings us his wants. If we have sufficient imagination we will endeavor to handle them profitably to him and to ourselves.

By RAYMOND ROSSON
County Agent, Washington County, Tenn.

Dealers, who read Croplife:

No doubt, most of your customers are farm people, or are very close to the people on the land . . . Remember their grandsires conquered this country, cultivated it from the Statue of Liberty to the Golden Gate and gave it to all of us . . . This land is for all of us, our children and grandchildren to "dress and to keep."

The people on the land number 13% and they produce the food and fiber for the other 87% of us, plus a lot for over-seas neighbors . . . They train men and w o m e n for teachers, doctors, lawyers, business men, legislators and preachers.

Some would call them managers, and they are good ones at that

(Continued on page 11)

Importance of Good Credit Stressed

Credit has been called by one business leader as a "special weapon" which makes his industry's job even tougher.

"Outstanding consumer credit has risen by nearly 70% in the past five years," he said. "Installment credit—the kind that puts its finger on income for months ahead—has doubled and today stands at about $26 billion."

"We know that to the consumer a dollar of credit is always much easier to spend than a dollar of cold cash."

Dealers of farm chemicals can bear out this business leader's statements if they do a credit business. Those

(Continued on page 12)

Establishing a Year-End Bonus Plan

Year-end bonus plans are becoming more popular; here are some ideas which will help get the most from your bonus plan

Dealers who use a year-end bonus as a part of their compensation plan find it has many advantages — and some drawbacks. A bonus plan will save tax dollars, increase employee loyalty, r e d u c e absenteeism, cost some money, and take time to compute each year.

Increases Employee Loyalty

Farm store employees who are compensated in part by a bonus develop a more loyal spirit. They have a stronger feeling of belonging to the profit team of the business. The year-end bonus makes the workers feel they were in part responsible for the profits of the store. They will put forth extra effort to keep profits up and the bonus payments coming in each year in the future.

In addition to the in-store loyalty, a year-end bonus will improve your store's prestige in your community. You will have plenty of applicants for any job vacancies that do develop in your organization. People like to work for a dealer who divides his profits with his workers.

Farm dealers realize an income tax saving when they have a year-end bonus plan. Naturally, your income tax payments are not reduced by the amount of your bonus payments. But, your taxable income is reduced dollar-for-dollar by the amount of your employee bonus payments.

For instance, if your net taxable income is $20,000, you will have income taxes of $6,260. (This does not take dependents or personal deductions into consideration and is based on a single proprietorship rather than a corporation.)

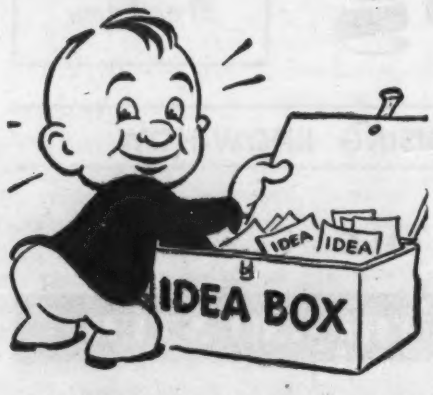
Suppose you decide to pay a 10% year-end bonus to your employees. Your taxable income is reduced dollar-for-dollar by this amount. Thus, your $20,000 taxable income is reduced to $18,000. On this amount of income, your income taxes would be $5,400 (figured on the same basis without dependents or personal deductions).

Your income tax savings with the year-end bonus plan will be $860

(Continued on page 14)

Better Selling

Richer Sales Fields for Dealers



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6353—Rotary Tillers

The Midland Co., builder of garden tractors, announces that retail feed and fertilizer dealers are eligible for dealerships on its line of rotary tillers and garden tractors. Coincident with this announcement is the introduction of a new Midland rotary

tiller. The tiller takes a 16-in. tillage swath, has special tines of rugged, forged steel of the slicing, non-heeling type, designed to stay remarkably clean, minimizing wrapping and winding, the company states. It is powered by a Briggs & Stratton 2¾ h.p. air-cooled engine, equipped with recoil starter and quiet muffler. The unit is said to be exceptionally well-balanced, providing ease of operation and tilling efficiency usually found only in much more expensive equipment. Controls are within easy reach of the operator. For further information about the equipment and dealerships, circle No. 6353 on the coupon and drop it in the mail.

No. 6351—Coating

A new folder has been prepared by Alfred Hague & Co., Inc., on its rubber base paint called by the trade name Rubalt 7-C Red Primer. The folder states that the product provides "metals, wood, concrete and other surfaces with long lasting protection against moisture, acids, alkalies, electrolysis, hydrolysis, salt water, sunlight, dirt and grease, mineral oils and alcohols." The product dries in one hour, goes over damp surfaces and can be applied by spray or roller, according to the folder. Directions for use are also included in the folder. Secure the folder by checking No. 6351 on the coupon and mailing it to Croplife.

No. 5348—List of Special Days

"Special Days, Weeks and Months in 1956," a 48-page booklet listing over 300 business promotion events, legal holidays and religious observances, has been published by the Chamber of Commerce of the United States. The chamber has also released, as a companion piece, a new "Trade Promotion Planning Calendar." This is an 8½ by 11 in., 26-page, spiral bound book of large block calendars that includes a chronological listing of special days and weeks in each month. Each item is available at 50¢ per copy from the Domestic Distribution Dept., Chamber of Commerce of the United States, 1615 H St. N.W., Washington 6, D.C.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6352—Bag Packers

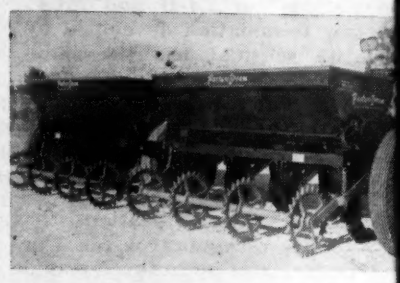
The H. L. Stoker Co. has prepared a new catalog entitled "Stoker Bag Packers," which describes its packers for filling multiwall bags and drums. The company's packers, according to the catalog, are designed to handle powdery, granular or pelleted materials including insecticides, chemicals, certain fertilizers and many other materials. Simple attachments make one packer fill valve bags, open mouth bags, drums and barrels, the catalog states. Five models are available, and all packers utilize a screw or auger to feed materials into bags and drums. Predetermined weights are generally held within less than plus or minus 0.5%, depending on the material being packed, the catalog states. Secure the catalog without charge by checking No. 6352 on the coupon and mailing it to Croplife.

No. 6350—Liquid Feeders

The problem of reducing encrusted gypsum in phosphoric acid feeding equipment in the continuous production of triple superphosphate through the use of the trade-named product, the Omega Rotodip liquid feeder is described in a 12-page reprint just issued by the Omega Machine Co., a division of B-I-F Industries, Inc. Contents of the reprint, written by Andrew A. Melnychuk, are titled, "Continuous Processing Equipment for the Fertilizer Industry." All components of the feeder, including the dipper wheel, are designed with straight sides and flat surfaces. Eliminated because of the necessity of recirculating system with the Rotodip liquid feeder, is the need for a float valve which increases the possibility of gypsum crust formation. the company announcement states. The reprint contains four new flow diagrams in addition to technical data and installation photos showing the Liquid Feeders in recently developed continuous processes. Secure the reprint by checking No. 6350 on the coupon and mailing it to Croplife.

No. 6349—Planter-Fertilizer Unit

Farmers who have a large acreage in pasture lands can now plant and fertilize these pastures in double quick time with the new "Twin Pasture Dream, claims its manufacturer, the Taylor Machine Works. Designed especially for use over large pasture areas, the unit is double the size of the company's standard Pasture Dream. It covers 13 ft. 4 in. each trip over. All other features are exactly the same as those of the standard machine. The company an-



nouncement states that many farmers are now planning to convert row crop land into pastures and the either model is ideal for planting cover crops on row-crop land without seedbed preparation. To secure more complete details check No. 6349 on the coupon and mail it to Croplife.

No. 6347—Fire Alarm System

The Seedburo Equipment Co. announces a new fire alarm system which is recognized by the Mill Mutual Fire Prevention Bureau. The system, called the Secoalarm, is said to be easy to install, and utilizes a sensitive thermostat. The company announcement states: "The Secoalarm, because of its simplicity, can be installed by any competent electrician or by any good mechanic. If a competent electrician is not available, unless, local ordinances or codes require otherwise." The alarm is said to have an audibility range of approximately one quarter mile. To secure additional information check No. 6347 on the coupon and mail it to Croplife.

No. 6348—Garden Book

The California Spray-Chemical Corp. has released its 1956 edition of the Ortho garden book. The book gives recommended treatments of insecticides and fungicides for insect pests and diseases. Liberally illustrated, the book has close-ups of plant pests and troubles. Information is presented in non-technical terms for the gardener, the company announcement states. Included in the book are plans for a practical garden structure. The book may be secured by checking No. 6348 on the coupon and mailing it to Croplife.

No. 6343—Tractor-Shovel

The third and largest of the new four-wheel-drive tractor-shovels to be added to its "Payloader" line has been announced by the manufacturer, the Frank G. Hough Co. Designa-

Send me information on the items marked:

- ☐ No. 5309—Accounts Receivable
- ☐ No. 5319—Magnetic Control
- ☐ No. 5341—Seed Treater
- ☐ No. 6343—Tractor-Shovel
- ☐ No. 6347—Alarm System
- ☐ No. 5348—List of Days
- ☐ No. 6348—Garden Book
- ☐ No. 6349—Planter Unit
- ☐ No. 6350—Liquid Feeders
- ☐ No. 6351—Coating
- ☐ No. 6352—Bag Packers
- ☐ No. 6353—Rotary Tillers

NAME .....

COMPANY .....

ADDRESS .....

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

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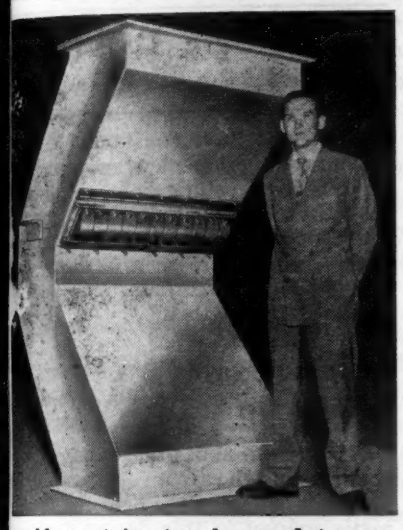
Reader Service Dept. Minneapolis 1, Minn.

ed as the model HO, the unit has a capacity of 2 cu. yds. It is similar in styling and outward appearance to the 1 and 1½ cu. yd. models HU and HH which were recently introduced. Features are "pry-out" bucket action; 40° of "breakout" at ground level and new standards of safety and stability. The clutch pedal has been eliminated and all shifts through all speed ranges in both forward and reverse can be made without coming to a stop or slowing down, company officials said. Check No. 43 on the coupon, clip and mail it to secure more information.

No. 5319—Magnetic Chute

A new zig-zag magnetic chute for processors of non-metallic minerals is in production by Prater Pulverizer Co. Designed for gravity flow of ground or finely crushed products, these chutes are said to be capable of removing not only the occasional nut or bolt, but the fine slivers of metal which normally wear off processing machinery. Each chute as-



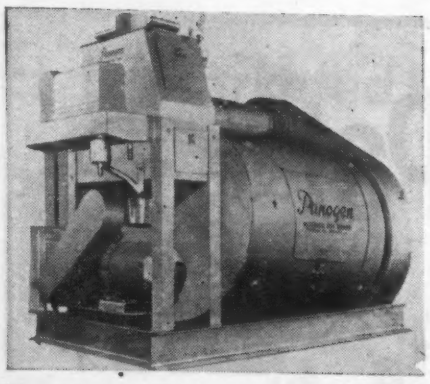
sembly contains two heavy duty permanent magnetic separators and the chutes are so constructed that the material first passes across one magnet, then completely reverses its direction of travel to pass across the second magnet. This construction insures double protection against tramp metal and is adaptable to either inclined or vertical material flows. They are available in sizes ranging from 8 in. to 48 in. wide. Standard equipment is of carbon steel, however stainless steel is also available. For further information check No. 5319 on the coupon and drop it in the mail.

No. 5309—Accounts Receivable

"Simplified accounts receivable for retailers" (SARR) is described in an 8-page folder released by Remington Rand. Based on the company's "simplified unit invoice accounting plan" (SUIAP), "simplified accounts receivable for retailers" uses no accounting machines and requires no highly trained clerks. It is claimed to provide a complete, accurate and fast method of handling accounts receivable. The method uses Remington Rand's Kolect-A-Matic trays, housed in Safe-Ledger equipment for 24-hour protection from fire, and provides an accounts receivable ledger composed of open, unpaid items only, a monthly statement for each customer, and a history of each account. Secure literature on this method by checking No. 5309 on the coupon and mailing it.

No. 5341—Seed Treater

The model KS-5 is a new automatic seed treater for the application of Panogen liquid seed disinfectant, it has been announced by Panogen, Inc. The model is designed for liquid seed treatment of wheat, oats, barley,



flax, cotton, etc. V-belts have been replaced by a new roller chain drive and speed reduction gear. The only V-belt used drives a fan which removes dust and fumes. The treater employs a modified "dip" measuring device. The model is rated at 350 bushels per hour capacity. Dimensions are: Height 43½ in., length 51½ in., width 32½ in. Secure more complete details by checking No. 5341 on the coupon and mailing it to Feedstuffs.

OREGON CONFERENCE

(Continued from page 8)

an acre demands an "exacting" application.

Rapid increases in use of dinitro amine for weed control in Oregon vegetable crops was discussed by Bob Ohling of Blue Lake Packers, Inc., Salem. Following Oregon State college trials, 600 gal. dinitro amine were used in Oregon in 1953. In 1954, 1,800 gallons were used; and consumption this year reached five to six thousand gallons. About 90% of Oregon bean growers now use the chemical, figuring it cuts their weeding costs in half. Most growers have used "band spraying" in the past, but Ohling says the trend is now to solid spraying which growers say more than offsets the cost of between-row cultivation.

Officers elected to head the Weed Conference in 1956 are Roy Stevenson, Madras, president; Larry Rowse, Portland, vice president; and Rex Warren, Oregon State college farm crops specialist, re-elected secretary. C. A. Tom, Rufus, retiring president, was named to the board of directors. Ex-officio directors named are George Kitzmiller, Portland, and W. C. Leth, Monmouth.

FIELD NOTES

(Continued from page 9)

. . . Others might call them laborers, and right they are . . . The folks behind the Iron Curtain would no doubt call them capitalists, and they might be right too, because they own a good portion of America, the soil . . . They are planners, stewards, agronomists, electricians, economists, veterinarians, salesmen and buyers.

They are copartners with Nature and Co. . . . They control the soil, seed and animals, but look toward Heaven for air, water, light and heat. . . . They are partners with science, industry, commerce, labor and the professions.

They are just about the best purchaser of more different commodities in America, because they buy consumer goods from the labor of millions . . . They know how America was made . . . Therefore they believe in freedom and work . . . They believe our most precious possession is liberty.

They have kept hunger from our shores with a pattern of abundance as no people or nation ever experienced.

Now, aren't you glad that you are cooperating and helping these food producers?

What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

Although gross tonnage of fertilizer materials declined during the 1954-55 crop year, the plant food content was up considerably, according to a report issued by the National Plant Food Institute. Higher analyses are given as the reason for this increase. . . . The International Cooperation Administration announced a $19½ million fertilizer authorization for the Republic of Korea. Sources of material will be world-wide.

Pesticide carry-over stocks were reported by USDA to be 9% smaller than last year's year-end inventory. Department of Agriculture officials emphasized, however, that over-all stocks of pesticidal materials are adequate despite the decrease in manufacturers' stocks.

The Oklahoma Plant Food Educational Society's conference, held at Stillwater Nov. 29-30, emphasized the important role played by fertilizers as acreage restrictions are imposed. Some 165 persons were present at the meeting. . . . U.S. Industrial Chemicals Co. announced that it will build a new plant at Tuscola, Ill., to make 75% phosphoric acid.

The Agricultural Ammonia Institute held its annual meeting in Kansas City Dec. 5-7, with the emphasis being placed on stepped up sales effort for the coming year. The industry, and particularly the dealers, must become more aggressive in selling the farmer, if satisfactory growth is to be continued, it was pointed out.

In its "Farm Cost Situation Report," the U. S. Department of Agriculture lauded both the fertilizer and pesticide industries for being of service to agriculture in keeping prices down. A chart prepared by the Agricultural Research Service showed fertilizers to be almost as inexpensive as they were in 1947-49, as compared to tremendous advances in taxes, machinery, labor, etc.

As to pesticides, the report said that this part of the chemical industry has been steadily contributing to improvement in the farm cost conditions through substantial reduction in the prices of its products since 1951.

The Food and Drug Administration gave approval to the use of an antibiotic, "Acronize Chlortetracycline" as an economic poison. This Aureomycin product is manufactured by American Cyanamid Co. . . . The Entomological Society of America, in its annual meeting at Cincinnati, Ohio, named as president, Dr. B. A. Porter, USDA, to succeed Dr. George C. Decker, Illinois Natural History Survey, Urbana, Ill.

The 8th Western Canada Weed Control Conference, held at Winnipeg, Man., in November, brought out reports that 14 million acres in western Canada had been treated with herbicides, mostly 2,4-D, during the past season. This represented an outlay of nearly $10 million. Canadian farmers are getting the idea of weed control, according to H. E. Wood, chairman of the Weeds Commission, Manitoba Department of Agriculture.

The Manufacturing Chemists' Assn. in its recent meeting in New York, paid considerable attention to the problems of merchandising chemical products, as well as discussing the technical side of production. . . . The Eastern Branch of the Entomological Society of America, in its recent meeting at Baltimore, Md., elected F. W. Poos, editor of the Journal of Economic Entomology, Washington, D.C., as chairman for 1956.

Use of granular DDT was recommended by USDA for control of European Corn Borer for the 1956 season. This recommendation followed extensive tests with different formulations, at the Ankeny (Iowa) corn borer research center.

The New Jersey conference for pesticide dealers, held at New Brunswick on Nov. 16, presented information on control of insects and plant diseases, with representatives of the New Jersey state agricultural experiment station and Rutgers taking part in the discussions. . . . Croplife announced that it has been accepted for membership in Business Publications Audit of Circulation, Inc., and that BPA audit reports on the newspaper's circulation are now available.

John Cipperly, Croplife's Washington correspondent, wrote that the United States has shown an "exasperating lack" of understanding in connection with the social and economic changes now taking place in farm communities of the nation. The chemical age, along with other advances in farm technology, is bringing about the transition.

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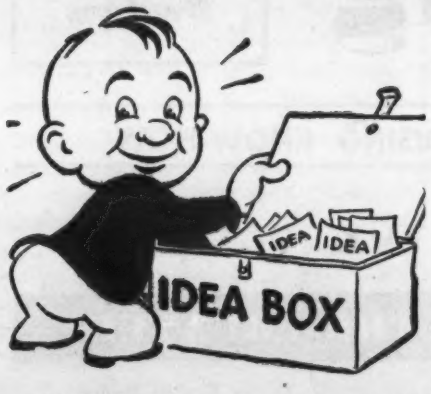


What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6353—Rotary Tillers

The Midland Co., builder of garden tractors, announces that retail feed and fertilizer dealers are eligible for dealerships on its line of rotary tillers and garden tractors. Coincident with this announcement is the introduction of a new Midland rotary

tiller. The tiller takes a 16-in. tillage swath, has special tines of rugged, forged steel of the slicing, non-heeling type, designed to stay remarkably clean, minimizing wrapping and winding, the company states. It is powered by a Briggs & Stratton 2¾ h.p. air-cooled engine, equipped with recoil starter and quiet muffler. The unit is said to be exceptionally well-balanced, providing ease of operation and tilling efficiency usually found only in much more expensive equipment. Controls are within easy reach of the operator. For further information about the equipment and dealerships, circle No. 6353 on the coupon and drop it in the mail.

No. 6351—Coating

A new folder has been prepared by Alfred Hague & Co., Inc., on its rubber base paint called by the trade name Rubalt 7-C Red Primer. The folder states that the product provides "metals, wood, concrete and other surfaces with long lasting protection against moisture, acids, alkalies, electrolysis, hydrolysis, salt water, sunlight, dirt and grease, mineral oils and alcohols." The product dries in one hour, goes over damp surfaces and can be applied by spray or roller, according to the folder. Directions for use are also included in the folder. Secure the folder by checking No. 6351 on the coupon and mailing it to Croplife.

No. 5348—List of Special Days

"Special Days, Weeks and Months in 1956," a 48-page booklet listing over 300 business promotion events, legal holidays and religious observances, has been published by the Chamber of Commerce of the United States. The chamber has also released, as a companion piece, a new "Trade Promotion Planning Calendar." This is an 8½ by 11 in., 26-page, spiral bound book of large block calendars that includes a chronological listing of special days and weeks in each month. Each item is available at 50¢ per copy from the Domestic Distribution Dept., Chamber of Commerce of the United States, 1615 H St. N.W., Washington 6, D.C.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6352—Bag Packers

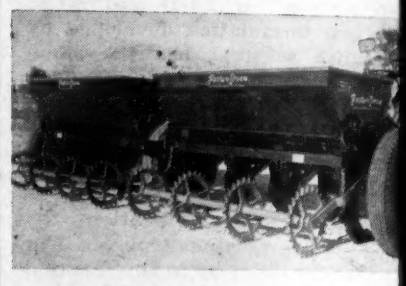
The H. L. Stoker Co. has prepared a new catalog entitled "Stoker Bag Packers," which describes its packers for filling multiwall bags and drums. The company's packers, according to the catalog, are designed to handle powdery, granular or pelleted materials including insecticides, chemicals, certain fertilizers and many other materials. Simple attachments make one packer fill valve bags, open mouth bags, drums and barrels, the catalog states. Five models are available, and all packers utilize a screw or auger to feed materials into bags and drums. Predetermined weights are generally held within less than plus or minus 0.5%, depending on the material being packed, the catalog states. Secure the catalog without charge by checking No. 6352 on the coupon and mailing it to Croplife.

No. 6350—Liquid Feeders

The problem of reducing encrusted gypsum in phosphoric acid feeding equipment in the continuous production of triple superphosphate through the use of the trade-named product, the Omega Rotodip liquid feeder is described in a 12-page reprint just issued by the Omega Machine Co., a division of B-I-F Industries, Inc. Contents of the reprint, written by Andrew A. Melnychuk, are titled, "Continuous Processing Equipment for the Fertilizer Industry." All components of the feeder, including the dipper wheel, are designed with straight sides and flat surfaces. Eliminated because of the necessity of recirculating system with the Roto dip liquid feeder, is the need for float valve which increases the possibility of gypsum crust formation the company announcement states. The reprint contains four new flow diagrams in addition to technical dat and installation photos showing th Liquid Feeders in recently develope continuous processes. Secure the re print by checking No. 6350 on th coupon and mailing it to Croplife.

No. 6349—Planter-Fertilizer Unit

Farmers who have a large acreag in pasture lands can now plant an fertilize these pastures in double quick time with the new "Twin Pasture Dream, claims its manufacturer, the Taylor Machine Work Designed especially for use over larg pasture areas, the unit is double th size of the company's standard Pa ture Dream. It covers 13 ft. 4 i each trip over. All other features ar exactly the same as those of th standard machine. The company a



nouncement states that many farm ers are now planning to convert row crop land into pastures and th either model is ideal for plantin cover crops on row-crop land witho seedbed preparation. To secure mo complete details check No. 6349 the coupon and mail it to Croplife.

No. 6347—Fire Alarm System

The Seedburo Equipment Co. a nounces a new fire alarm syste which is recognized by the Mill Mu tual Fire Prevention Bureau. Th system, called the Secoalarm, is sa to be easy to install, and utilizes sensitive thermostat. The compan announcement states: "The Sec alarm, because of its simplicity, ca be installed by any competent ele trician or by any good mechanic a competent electrician is not ava able, unless, local ordinances or cod require otherwise." The alarm is sa to have an audibility range of a proximately one quarter mile. To s cure additional information check N 6347 on the coupon and mail it Croplife.

No. 6348—Garden Book

The California Spray-Chemic Corp. has released its 1956 editi of the Ortho garden book. The bo gives recommended treatments of i secticides and fungicides for inse pests and diseases. Liberally illu trated, the book has close-ups plant pests and troubles. Inform tion is presented in non-technic terms for the gardener, the compan announcement states. Included in t book are plans for a practical gard structure. The book may be secur by checking No. 6348 on the coup and mailing it to Croplife.

No. 6343—Tractor-Shovel

The third and largest of the n four-wheel-drive tractor-shovels to added to its "Payloader" line h been announced by the manufact er, the Frank G. Hough Co. Design

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Send me information on the items marked:

- ☐ No. 5309—Accounts Receivable
- ☐ No. 5319—Magnetic Control
- ☐ No. 5341—Seed Treater
- ☐ No. 6343—Tractor-Shovel
- ☐ No. 6347—Alarm System
- ☐ No. 5348—List of Days
- ☐ No. 6348—Garden Book
- ☐ No. 6349—Planter Unit
- ☐ No. 6350—Liquid Feeders
- ☐ No. 6351—Coating
- ☐ No. 6352—Bag Packers
- ☐ No. 6353—Rotary Tillers

NAME .....

COMPANY .....

ADDRESS .....

CLIP OUT — FOLD OVER ON THIS LINE — FASTEN (STAPLE, TAPE, GLUE) — MAIL

FIRST CLASS PERMIT No. 2
(Sec. 34.9, P. L. & R.)
MINNEAPOLIS, MINN.

BUSINESS REPLY ENVELOPE
No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Croplife

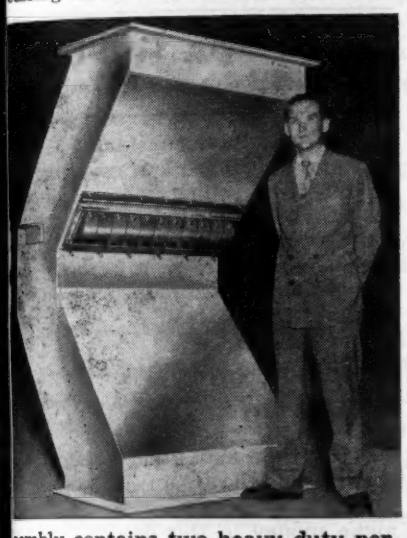
P. O. Box 67,

Reader Service Dept. Minneapolis 1, Minn.

ed as the model HO, the unit has a capacity of 2 cu. yds. It is similar in styling and outward appearance to the 1 and 1½ cu. yd. models HU and HH which were recently introduced. Features are "pry-out" bucket action; 40° of "breakout" at ground level and new standards of safety and stability. The clutch pedal has been eliminated and all shifts through all speed ranges in both forward and reverse can be made without coming to a stop or slowing down, company officials said. Check No. 6343 on the coupon, clip and mail it to secure more information.

No. 5319—Magnetic Chute

A new zig-zag magnetic chute for processors of non-metallic minerals is in production by Prater Pulverizer Co. Designed for gravity flow of ground or finely crushed products, these chutes are said to be capable of removing not only the occasional nut or bolt, but the fine slivers of metal which normally wear off processing machinery. Each chute as-



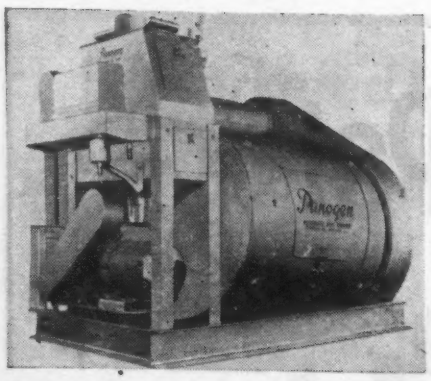
sembly contains two heavy duty permanent magnetic separators and the chutes are so constructed that the material first passes across one magnet, then completely reverses its direction of travel to pass across the second magnet. This construction insures double protection against tramp metal and is adaptable to either inclined or vertical material flows. They are available in sizes ranging from 8 in. to 48 in. wide. Standard equipment is of carbon steel, however stainless steel is also available. For further information check No. 5319 on the coupon and drop it in the mail.

No. 5309—Accounts Receivable

"Simplified accounts receivable for retailers" (SARR) is described in an 8-page folder released by Remington Rand. Based on the company's "simplified unit invoice accounting plan" (SUIAP), "simplified accounts receivable for retailers" uses no accounting machines and requires no highly trained clerks. It is claimed to provide a complete, accurate and fast method of handling accounts receivable. The method uses Remington Rand's Kolect-A-Matic trays, housed in Safe-Ledger equipment for 24-hour protection from fire, and provides an accounts receivable ledger composed of open, unpaid items only, a monthly statement for each customer, and a history of each account. Secure literature on this method by checking No. 5309 on the coupon and mailing it.

No. 5341—Seed Treater

The model KS-5 is a new automatic seed treater for the application of Panogen liquid seed disinfectant, it has been announced by Panogen, Inc. The model is designed for liquid seed treatment of wheat, oats, barley,



flax, cotton, etc. V-belts have been replaced by a new roller chain drive and speed reduction gear. The only V-belt used drives a fan which removes dust and fumes. The treater employs a modified "dip" measuring device. The model is rated at 350 bushels per hour capacity. Dimensions are: Height 43½ in., length 51½ in., width 32½ in. Secure more complete details by checking No. 5341 on the coupon and mailing it to Feedstuffs.

OREGON CONFERENCE

(Continued from page 9)

an acre demands an "exacting" application.

Rapid increases in use of dinitro amine for weed control in Oregon vegetable crops was discussed by Bob Ohling of Blue Lake Packers, Inc., Salem. Following Oregon State college trials, 600 gal. dinitro amine were used in Oregon in 1953. In 1954, 1,800 gallons were used; and consumption this year reached five to six thousand gallons. About 90% of Oregon bean growers now use the chemical, figuring it cuts their weeding costs in half. Most growers have used "band spraying" in the past, but Ohling says the trend is now to solid spraying which growers say more than offsets the cost of between-row cultivation.

Officers elected to head the Weed Conference in 1956 are Roy Stevenson, Madras, president; Larry Rowse, Portland, vice president; and Rex Warren, Oregon State college farm crops specialist, re-elected secretary. C. A. Tom, Rufus, retiring president, was named to the board of directors. Ex-officio directors named are George Kitzmiller, Portland, and W. C. Leth, Monmouth.

FIELD NOTES

(Continued from page 9)

. . . Others might call them laborers, and right they are . . . The folks behind the Iron Curtain would no doubt call them capitalists, and they might be right too, because they own a good portion of America, the soil . . . They are planners, stewards, agronomists, electricians, economists, veterinarians, salesmen and buyers.

They are copartners with Nature and Co. . . . They control the soil, seed and animals, but look toward Heaven for air, water, light and heat. . . . They are partners with science, industry, commerce, labor and the professions.

They are just about the best purchaser of more different commodities in America, because they buy consumer goods from the labor of millions . . . They know how America was made . . . Therefore they believe in freedom and work . . . They believe our most precious possession is liberty.

They have kept hunger from our shores with a pattern of abundance as no people or nation ever experienced.

Now, aren't you glad that you are cooperating and helping these food producers?

What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

Although gross tonnage of fertilizer materials declined during the 1954-55 crop year, the plant food content was up considerably, according to a report issued by the National Plant Food Institute. Higher analyses are given as the reason for this increase. . . . The International Cooperation Administration announced a $19½ million fertilizer authorization for the Republic of Korea. Sources of material will be world-wide.

Pesticide carry-over stocks were reported by USDA to be 9% smaller than last year's year-end inventory. Department of Agriculture officials emphasized, however, that over-all stocks of pesticidal materials are adequate despite the decrease in manufacturers' stocks.

The Oklahoma Plant Food Educational Society's conference, held at Stillwater Nov. 29-30, emphasized the important role played by fertilizers as acreage restrictions are imposed. Some 165 persons were present at the meeting. . . . U.S. Industrial Chemicals Co. announced that it will build a new plant at Tuscola, Ill., to make 75% phosphoric acid.

The Agricultural Ammonia Institute held its annual meeting in Kansas City Dec. 5-7, with the emphasis being placed on stepped up sales effort for the coming year. The industry, and particularly the dealers, must become more aggressive in selling the farmer, if satisfactory growth is to be continued, it was pointed out.

In its "Farm Cost Situation Report," the U. S. Department of Agriculture lauded both the fertilizer and pesticide industries for being of service to agriculture in keeping prices down. A chart prepared by the Agricultural Research Service showed fertilizers to be almost as inexpensive as they were in 1947-49, as compared to tremendous advances in taxes, machinery, labor, etc.

As to pesticides, the report said that this part of the chemical industry has been steadily contributing to improvement in the farm cost conditions through substantial reduction in the prices of its products since 1951.

The Food and Drug Administration gave approval to the use of an antibiotic, "Acronize Chlortetracycline" as an economic poison. This Aureomycin product is manufactured by American Cyanamid Co. . . . The Entomological Society of America, in its annual meeting at Cincinnati, Ohio, named as president, Dr. B. A. Porter, USDA, to succeed Dr. George C. Decker, Illinois Natural History Survey, Urbana, Ill.

The 8th Western Canada Weed Control Conference, held at Winnipeg, Man., in November, brought out reports that 14 million acres in western Canada had been treated with herbicides, mostly 2,4-D, during the past season. This represented an outlay of nearly $10 million. Canadian farmers are getting the idea of weed control, according to H. E. Wood, chairman of the Weeds Commission, Manitoba Department of Agriculture.

The Manufacturing Chemists' Assn. in its recent meeting in New York, paid considerable attention to the problems of merchandising chemical products, as well as discussing the technical side of production. . . . The Eastern Branch of the Entomological Society of America, in its recent meeting at Baltimore, Md., elected F. W. Poos, editor of the Journal of Economic Entomology, Washington, D.C., as chairman for 1956.

Use of granular DDT was recommended by USDA for control of European Corn Borer for the 1956 season. This recommendation followed extensive tests with different formulations, at the Ankeny (Iowa) corn borer research center.

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Better Selling

Richer Sales Fields for Dealers

When Bert Hughes, the red cheeked mailman, came in at 2 p.m. that afternoon, he said a cheery hello, dropped some letters and a catalog on Oscar's desk, and then began talking to Tillie Mason about a Methodist bazaar. He and she belonged to the same church.

Suddenly Oscar let out a roar. "Bert!" he yelled. "Why is this letter so late? Just look—now we've lost a discount just because the U.S. post office department is careless."

Bert Hughes looked shocked. He was a conscientious postman, having been on duty fifteen years, had a wife and two fine children and was a good citizen. "What's the matter?" he asked, coming forward.

Oscar handed him a letter. The lanky postman looked at it. "Oh, it was missent to Clearfield by mistake," he said frankly relieved. "It was unopened. You got the contents, didn't you?"

"You bet I got the contents," Oscar snapped. "It was a bill from McCloskey & Co. two weeks late. Now the discount date is past."

"Gee," said the mailman, "that's too bad. But it doesn't happen very often. Think of the millions of letters that go right to their destination every day, Oscar. Only occasionally does one get lost."

"Somebody was careless," Oscar intoned relentlessly. "Who's going to pay us the discount on this bill? You?"

"Me?" echoed the mailman. "Why, I'm not responsible. I delivered the letter today, as soon as it was given to me. It's somebody else's fault the letter was missent, not mine."

"That's a government man for you," said Oscar, "always passing the buck. There's a five dollar two per cent discount on this bill, and we certainly aren't going to stand the loss. Our taxes are too high the way it is. We work for our money, and the government just goes on squandering it, having too many bureaus and employees, and missending mail all over the country."

Bert Hughes looked offended. "Mr. Schoenfeld, I work hard every day. I earn my salary. I don't squander the taxpayers' money."

"Then sign this letter that you delivered it on this day and the hour," Oscar challenged. "I can write to the Postmaster General, then, and complain to him about poor service."

Bert Hughes looked undecided. "I can't sign that. I'm not supposed to. If it was a registered or special delivery letter, yes, but not this letter."

"Passing the buck again," Oscar snapped. "No wonder business men can't make any money today, when the government does everything it can to bungle things up for them. When a business man can't get his bills on time, so he can discount them, ach, then things are just terrible."

"You've never had cause to complain before," put in Mr. Hughes quietly. "No important letters were ever lost here, were they, or bills either?"

"Not that I know of, but that still doesn't give us this $5 discount. It's not our fault that we didn't pay the bill. We didn't get it. The manufacturer mailed it, but we didn't get it. Looks to me like Uncle Sam is responsible. We would have paid it if we had got it by the tenth. Ach, we always discount our bills."

Oscar was a stubborn cuss and when it came to money—the firm's money—he could be more than stubborn. He could be ornery. "Now, suppose," Oscar went on, his temper rising, "that I didn't get my income tax statement in the mail and couldn't pay it because I didn't get the quarterly notice. If I told that to Uncle Sam would he believe me? No, he would say, pay it anyway, and a fine, too, for not paying on time."

Bert Hughes was getting more worried. "Gosh," he said, "that is a puzzle, isn't it? I really don't know who should pay that $5 discount."

"Well, we ain't paying it," roared Oscar. "You can bet on that. It isn't our fault. It's the government's fault we didn't get it—the bill. They should pay it."

Bert Hughes' weather beaten face lighted up. "Why, Oscar, I know," he smiled. "Just write to the manufacturer and say you didn't get the bill until after the discount day, because the letter was missent and would they let you take the discount anyway."

"Maybe that will work," Oscar admitted, "if you will sign your name to the envelope and say you delivered the letter today and at 2 p.m. Then the supplier will believe me. Otherwise he won't. He'll think we're lying, that we had the bill all this time."

Bert Hughes' face fell. "I can't sign it, Oscar. Only specials and registered. I told you that."

"Well, then don't make any crazy suggestions about asking for a new discount on account of the mail not being delivered to me on t:ime," Oscar snapped. "You haven't been of one bit of help. First thing you know business will be so tied up with government red tape that we won't even be able to get out of the restroom without blowing a whistle three times."

Tillie Mason looked up, shocked, from her work, but said nothing, and Oscar just stood there fuming at Bert Hughes. Discouraged, the mailman went out the door, shaking his head.

Later, there was the sound of a car stopping outdoors. Then in came stocky Bill Schultz, salesman for the McCloskey Mfg. Co. He looked a little apprehensive, as though worried about something.

"Hello, Oscar," he said soothingly.

Oscar stared at him coldly.

"The—the boss sent me out to see you," said Mr. Schultz. "Your—your last bill is about two weeks overdue. We're a little short of money at this time of year, and the b—boss wants to know if you'll do us a favor and write out a check. He was surprised that you skipped the discount date."

"Oh, he was, was he?" Oscar laughed mirthlessly. Very slowly he reached for a pencil, walked to the sharpener, took much time getting the pencil point in perfect shape, then came back slowly to his desk. "And we forget the discount date? Well, well!"

Suddenly all the irritation of the missent statement, the argument with the mailman, swept through Oscar like a hurricane, darkening his face and quelling the voice of reason. "Get out!" he thundered, his pointing finger like a ramrod. "And if your boss comes around he can get out too! You . . . the McCloskey Mfg. Co. . . . the U.S. Government . . . all trying to make it tough for us. I won't pay that bill. Go ahead and sue us!"

Mouth gaping, the salesman beat a hasty retreat.

Oscar's trembling hands reached for his coat and hat. "I'm done for the day!" he challenged Tillie. "I'm done."

The office door banged behind him. "Well, for Heaven's sake!" she gasped. "And I thought I knew him. He threw away a five dollar discount just like that. Goes to show . . . you never know. . . ."

CFA OFFICERS—Above are shown members of the board of directors of the California Fertilizer Assn. as they posed during last month's annual meeting of the association in San Francisco. In the front row, from left to right, are Howard H. Hawkins, Golden State Plant Food Co., Glendora, secretary; Jack Baker, Bandini Fertilizer Co., Los Angeles, vice president; William E. Snyder, Wilbur-Ellis Co., Los Angeles, president; William G. Hewitt, Pacific Guano Co., Berkeley, treasurer, and Sidney H. Bierly, San Marino, executive secretary and manager. Those standing, all directors, are Fred R. Bryant, Brown & Bryant, Shafter; B. H. Jones, Sunland Industries, Inc., Fresno, retiring president; M. M. Stockman, the Mountain Copper Co., Ltd., San Francisco, and Virgil A. Frizzell, the Triangle Co., Salinas. One of the most significant moves of the meeting was to open active membership in the association to (1) converters "engaged in the business of converting anhydrous ammonia to aqua ammonia and distributing same to users," and (2) distributors of "fertilizers, either dry or liquid, and those who secure their supplies from basic prime producers and who are substantially in the business of distributing fertilizers."

OVER THE COUNTER

(Continued from page 9)

dealers who have constantly pursued a sound credit policy, coupled with an effective selling job, are finding that these two foundation stones are the props for a good business operation. Credit business is here to stay. The dealer has to determine how he can best live with it.

Keeping Farm Income Up

Fertilizers and other farm chemicals need the team play of good farm management to help the farmer make money in this day of declining farm income. Concrete proof of the value of better farm management comes from Wisconsin where 63 farmers who belong to management associations actually increased their labor income during 1954.

Average labor income for these farmers was $2,513, as against $2,446 on the same farms in 1953.

Diversification paid off on the larger farms with good crops and livestock, according to P. E. McNall and A. O. Follett, University of Wisconsin agricultural economists. Labor income was higher for those who depended on milk for less than half the cash income.

That doesn't mean diversifying alone brings high income, Mr. McNall and Mr. Follett explain. A farm, like a factory, needs to run at capacity, and adding another enterprise to the farm business doesn't help until crop land and livestock are brought up to good production.

"Labor income" means the net farm income minus annual interest charges on the money the farmer has invested in his land, buildings, machinery, and livestock.

Farms in the survey averaged 174 acres. The farms averaged 106 crop acres and 27 cows. Average total income before expenses was $14,284 in 1954, compared to $13,776 in 1953.

ASC COMMITTEEMAN

WASHINGTON—Ezra Taft Benson, secretary of agriculture, has announced the appointment of Moniel Mirabal of San Rafael as a member of the New Mexico State Agricultural Stabilization and Conservation Committee, effective Jan. 1, 1956. Mr. Mirabal fills the vacancy created when Santiago Marquez of Los Lunas accepted a position as state ASC farm fieldman.

if your product is marketed through distributors and dealers . . .

Croplife is for YOU!

AN IMPORTANT EXCLUSIVE is available to advertisers whose agricultural chemical products are marketed through distributors and dealers. It is Croplife's unique *regional crop-area circulation plan,* carefully developed to fill an urgent need in the industry's marketing and advertising facilities—the need of advertisers to reach the dealers and distributors and farm advisers with an up-to-date story of their products and their consumer promotion plans.

THIS IS THE PLAN: In addition to the weekly circulation to manufacturers and formulators, Croplife is distributed on a regional crop-area basis to the dealer-distributor-farm adviser segment of the industry. The merchandising section in each issue of Croplife is specifically edited for dealers in one specific region. This carefully planned editorial formula insures intense reader interest.

More than 11,000 DEALERS, 1,700 custom operators and 1,000 farm advisers receive the issue of Croplife specifically edited for their regional crop-area once each four weeks. The mailing schedule for this group covers consecutively four geographic regions of the United States (see map) with one of four regional dealer issues: The Northeast Dealer Issue, the South Dealer Issue, the Midwest Dealer Issue or the West Dealer Issue. Each week Croplife goes to more than 3,500 dealers, distributors and farm advisers in one of these four regional crop-areas.

THIS CIRCULATION EXCLUSIVE is available only through Croplife. The regional crop-area circulation to dealers has been carefully developed to fit the particular needs of the agricultural chemical industry. Many individual products have been developed and approved and are being sold for use on a specific crop; therefore, marketing and promotion plans must be directed specifically to the appropriate crop-area. Croplife's dealer circulation developed along crop-area lines offers advertisers the *most flexible medium possible,* designed to give "direct-hit" coverage for specific messages without the higher cost of a larger-than-necessary circulation on an inflexible nationwide basis. Advertisers interested in reaching dealers in more than one region can do so easily and economically with a selective advertising schedule.

In addition to its national coverage, Croplife offers a selective regional circulation plan in these crop-areas

HOW TO USE THE PLAN: Select the regional crop-areas—Northeast, South, Midwest or West—in which you need to reach dealers, distributors and farm advisers with the up-to-date story of your products and your consumer promotion plans. Plan your message to inform and to educate this group. Then, select the appropriate issues of Croplife to carry your advertisements. Croplife's printed circulation statement outlines the four regional crop-areas in detail and gives the issue-by-issue mailing schedule. Ask us for a copy.

AND SOON—4000 additional selected dealers will be added!

BEGINNING IN JANUARY this important circulation exclusive becomes even more valuable to advertisers who are reaching dealers through the pages of Croplife. An additional 4,000 selected dealers handling agricultural chemicals will be receiving the issues of Croplife edited specifically for their crop-areas. One thousand dealers in each regional area have been screened and verified and will be added to Croplife's controlled circulation plan, bringing the total number of dealers, distributors and farm advisers receiving Croplife to more than 18,000. Each week Croplife will go to more than 4,500 of these interested readers in one of the four regional crop-areas.

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FARM SERVICE DATA
Extension Station Reports

Washington could be losing its fame as a haven for hay fever sufferers because of a mere weed.

Each year many visitors from the midwest come to Washington to escape hay fever in their home states. Henry Wolfe, extension weed specialist at Washington State College, said recently there is some possibility that weeds could limit this business. In 1954, the tourist trade in this state amounted to $146 million.

Western ragweed, which is one of the worst offenders in causing hay fever, has been identified in four eastern Washington counties. Mr. Wolfe said they are Douglas, Chelan, Benton and Klickitat.

It has been estimated that the number of persons affected by hay fever is exceeded only by those suffering from heart disease and rheumatic conditions. In Washington, Mr. Wolfe said, an estimated five per cent of the population have hay fever.

★

A pesky, rat-sized varmint that inflicts an estimated $2,800,000 yearly loss to the state's agriculture is the subject of the Colorado cooperative pocket gopher research project.

Three research groups cooperating in the study are the Colorado A and M Experiment Station, the U.S. Fish and Wildlife Service and the U.S. Forest Service. Each handles a distinct part of the program: chemical control, biological studies and the relationship of the gopher to watershed management. Richard S. Miller, stationed at Colorado A&M, is project leader for the research.

Mr. Miller says this about damage caused by gophers: "In spite of their small size, these rodents can seriously damage plant life and farm and range land. A population of 10 or 12 per acre, which is average, can turn over five to seven tons of dirt each year while digging their burrows. Dirt they throw out of their holes covers up good forage plants and seems to boost weed growth. Also, the holes are a problem in irrigating; they soak up a lot of water, and they break down ditch banks."

The cooperative study is aimed at finding measures that will control the most destructive species, according to Mr. Miller. One method under investigation consists of killing weeds with sprays, thus diminishing the gophers' main source of food.

Poisons that offer possibilities for control also are being studied. The scientists expect to begin intensive investigations next spring.

★

It pays to add superphosphate to barnyard manure to insure maximum growth of improved pasture legumes and grasses, according to the California Fertilizer Assn., which recommends adding the phosphate to the manure before it is spread in the field. Some farmers report that one load of phosphated manure can do the work of two untreated loads as a top-dressing for new legume-grass seedings or old established hay fields and pastures.

The association points out that superphosphate gives the manure a better plant nutrient balance. Manure is rather low in phosphate. A ton of manure without bedding contains an average of 10 lb. of nitrogen. By adding 25 lb. of superphosphate to each ton, you can increase the manure's phosphate content to 10 lb. per acre.

The superphosphate helps the manure hold nitrogen that might otherwise be lost. Superphosphate can be added any time of the year—winter or summer. One method is to place the superphosphate in the spreader as the manure goes onto the field. The association recommends adding 25 to 30 lb. per load. Another method is to put the superphosphate in the gutters of the stable or open-run barn at the rate of one pound per cow per day.

★

Idaho's prune growers no longer can safely ignore the Cytospora fungus as a weak thing, common in orchards everywhere and nothing to worry about, declares Dr. A. W. Helton, assistant plant pathologist in the University of Idaho College of Agriculture.

"In Idaho," he reports, "a spectacular change has taken place during the past four or five years. For strange reasons, as yet unexplained, the Cytospora fungus has become a rampaging orchard destroyer."

In the past, Dr. Helton said, the fungus has received little attention because it attacked only weak or dying trees. In Idaho, however, it has been hitting young and vigorous ones. Young orchards have been abandoned because of its destruction.

In his five-year study of the problem in Idaho, Dr. Helton has found that the fungus appears to be most active during the period when pruning normally should be done. Pruning wounds, he feels, could be prime entry points for the fungus. Winter injuries also provide easy entry for the fungus.

To reduce the danger of spread, Dr. Helton recommends that all pruning cuts be painted with suitable disinfectant materials. He also suggests that pruning tools be dipped in the disinfecting solution and that prunings be hauled out of the orchard and burned.

★

By treating barley with X-rays, University of California plant scientists are speeding mutations from which to select stiffer strawed plants to cross with Hannchen barley.

The purpose of the research is to strengthen Hannchen barley against wind damage. The irradiated plants are being grown on the University's Tulelake field station near the Oregon border.

Station Experiments With Cotton Spacing

LUBBOCK, TEXAS — Ordinarily cotton in West Texas is planted in rows about 40 inches apart. The Lubbock Experiment Station, however, has tried various spacings to find out the most effective. On one plot this last year they sowed the cotton like wheat, getting about 218,000 plants to the acre.

By putting on 800 lb. of fertilizer to the acre and plenty of water, the station got a tremendous yield. The only drawback to the results was that the fiber was too fine to meet market requirements.

BONUS PLAN

(Continued from page 9)

($6,260 less $5,400). Thus, you can pay your employees a year-end bonus of $2,000 for an out-of-pocket expense of only $1,140.

Farm dealers with a higher net taxable income and in a higher income tax bracket will have larger savings. Lower tax bracket taxpayers will not realize quite as large savings, but the year-end bonus will probably be smaller, too.

Santa Claus is fine on Christmas, but most people do not expect him every day of the year. And, if a farm dealer pays a year-end bonus as a gift, it will not accomplish as much as possible in building employee loyalty. Then, too, a gift is not a tax deduction like a bonus based on merit is, according to the Internal Revenue Bureau.

As a general rule, you will find that a year-end bonus is appreciated more if it is awarded on the basis of merit. Your employees will work harder and be more loyal if they feel they earn the year-end bonus you give them.

Some farm dealers base the year-end bonus on results. This method has much to recommend it from an employee relations standpoint and taxwise. However, unless your store operates on a cost accounting basis and you have a yardstick to measure results for all employees, it will not be practical to allocate the bonus on this basis.

Another plan is to base the bonus on the length of service for the employees. For instance, if the total time of five employees totals 25 years service, the bonus would be paid on the basis of 4% of the total bonus for each year of employment. With a bonus of $2,000 a one-year employee would receive $80; a five-year employee, $400; and a 10-year employee, $800. This system puts extra emphasis on employee loyalty and tends to reduce labor turnover in the business.

Still another plan of allocating the year-end bonus to the employees is to base it on the annual salary of the workers. The total payroll for the farm dealer is divided into each employee's annual earnings. This provides a percentage figure to be used in dividing the year-end bonus to each employee.

For example, a farm dealer with an annual payroll of $20,000 would divide this figure into an employee's annual earnings of $4,000 for a 20% allocation figure. The employee's share of the store's year-end bonus would be 20% in this case.

Other factors may be worked into the allocation of the year-end bonus. For instance, you may want to include a provision for encouraging new employees. You may want to give extra bonus payments for cost-reducing suggestions. Or, you may want to have penalty provisions for excessive absenteeism. All of these, and other profit factors, can be worked into a year-end bonus plan.

Taxwise there are two things to keep in mind about your year-end bonus plan:

1. It must be "reasonable."
2. It must not be a disguised dividend.

There is no exact mathematical formula for computing the "reasonable" requirement of the year-end bonus. According to the Internal Revenue Bureau, a bonus is "reasonable" if it is what would be paid under similar circumstances by similar firms for similar services.

As a general rule, the Internal Revenue Bureau interprets "reasonableness" by the skill or training required on the job, the profit earned as a result of the employee's work, and the future prospects for the individual and the dealer.

Another area often investigated by the Internal Revenue Bureau on year-end bonus payments is to minor children of the farm dealer. When the year-end bonus payment to a minor child is out of line with the responsibility, skill, and profit contribution of the child; the amount of the year-end bonus may be disallowed by the Commissioner. This, of course, will increase your income taxes.

Part No. 2 of the requirements for a year-end bonus plan covers the "disguised dividend" aspect. This provision hits bonus payments to stockholding employees hardest, but should be carefully checked in all cases.

When a bonus paid to an employee bears a close relationship to his holdings in the company, the Internal Revenue Bureau may disallow part or all of the year-end bonus paid. Even though there is no relationship between the holdings of the stockholding employee and his year-end bonus part of the payment may be disallowed.

To be on the safe side, a farm dealer should base the year-end bonus payments on: Skill, training, responsibility, working conditions, profit contribution, and future prospects of the employee in the firm's business.

Pay Bonus with Showmanship

This, of course, does not mean that a farm dealer should hire a brass band when he presents his employees their year-end bonus. But, a little quiet showmanship will make the employees feel that they are actually getting something over and above their regular salary as a bonus.

One farm dealer, for instance, gives his year-end bonus payments in the form of certified checks. This makes the transaction seem more legal to the employees and makes the payment more impressive.

Another farm dealer always passes out his bonus checks in private. This provides an opportunity to add a few personal words of "thanks" to the cash bonus he gives to his employees. And, "it tends to keep the amount of the bonus on a more confidential basis in the organization.

Contrast these ideas with a bonus that is included in the regular pay check. The employees know there is a bonus, but it takes a little figuring to arrive at the amount that is extra. And, with income tax and social security deductions, the amount of the year-end bonus is not as impressive as when it is paid separately.

Year-end bonus plans do not cost as much as you might think. And when the long-term benefits of better employee relations is considered, the expense is changed to an investment in the future success of your business.

California Dealer Appointments Made

SACRAMENTO, CAL. — Several appointments have been announced by E. W. Nelson, South Pasadena, president of the California Hay, Grain & Feed Dealers Assn.

Henry G. Turner, Grange Co., Modesto, has been appointed vice president to fill the office vacated by Vincent P. Finigan.

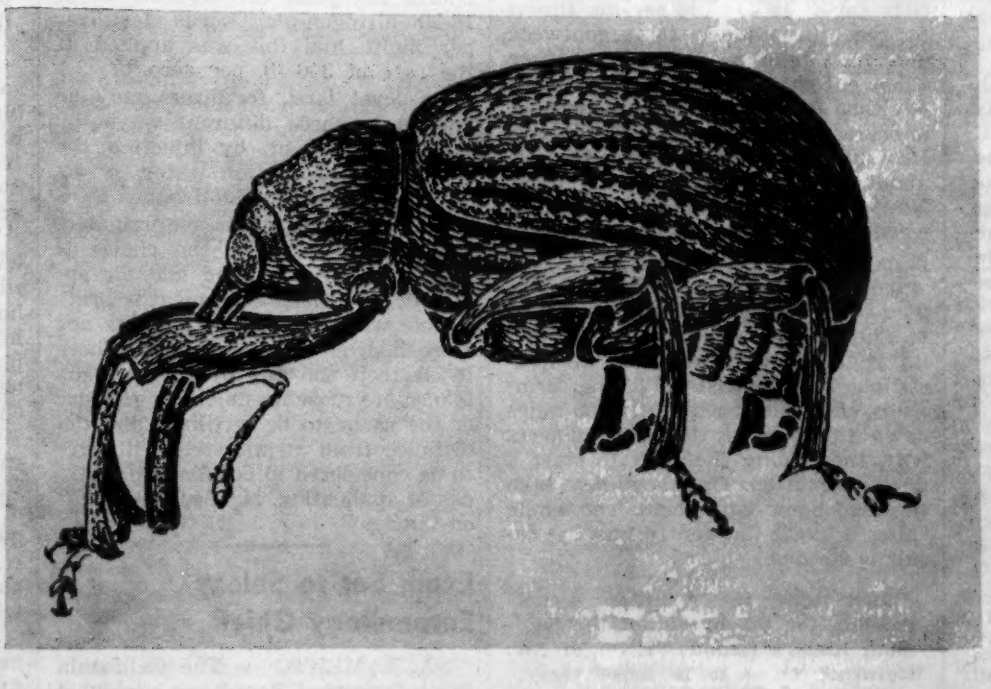
Jack Flammer, Flammer Grain Co., Los Angeles, has been named general chairman of the 1956 convention which will be held at the Ambassador Hotel, Los Angeles, April 12-14.

New chairman of the grain division of the association is Harry N. Stevenson, Thos. D. Stevenson & Sons, San Francisco. Blair Erigero, Pillsbury Mills, Inc., Stockton, will serve as a member of the division.

BUG OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board

Pepper Weevil



How to Identify

The adult pepper weevil is a black snout beetle with grey or yellow markings. It is about an eighth-inch in length, with its snout accounting for about half the length of the body. In the larval stage, the bug is greyish-white with a pale brown head. Larvae are legless and are up to a quarter-inch in length.

Damage Done by Pepper Weevil

As the pest's name indicates, it does major damage to pepper plants. The adults feed on the foliage of the plants, blossom buds and tender pods. Larvae are also destructive. They feed within buds and pods, resulting in misshapen and discolored pods. Both the buds and pods frequently fall off the plant. The adult beetle lays eggs in the buds or fruits of peppers. The larvae are usually found tunneling in the seed mass in the center of the pods. This pest is found from coast to coast across the southern portion of the U.S.

Control of Pepper Weevil

Various pesticidal chemicals have been recommended for control of this pest and recommendations may be different from state to state. In view of the necessity of having residue-free edible portions of the plant, it is advisable to contact county agents or state experiment station entomologists for information concerning timing and dosages.

Illustration of Pepper Weevil furnished Croplife through courtesy of U.S. Department of Agriculture.

Previous "Bug of the Week" features are being reprinted in attractive 24-page booklet, priced at 25¢ single copies; reduced rates in quantities. Write Croplife Reprint Dept., Box 67, Minneapolis 1, Minn.

No Single "Best System" of Weed Control Available, Speakers Tell Idaho Meeting

MOSCOW, IDAHO — County weed supervisors and others interested in weed control representing all parts of Idaho, met recently at the University of Idaho for a 5-day session to attend the third biennial weed control short course on the University campus here. Despite record-breaking cold weather, most of the state's weed supervisors were on hand along with University agronomists, livestock men, local farmers, chemical salesmen, personnel from the state department of agriculture, totaling about 60 persons in all.

The meeting's talks brought out clearly that there is no single "best system" for fighting weeds in Idaho, with the state's varying conditions of soil, moisture and altitude and where cropping conditions differ to fit these conditions.

Ideas of how best to cope with the weed problem seemed to be as numerous as the people present. Supervisors from various portions of the state held different ideas based on long months of working with weeds that seemed to take the effects of many herbicides in stride and continue to survive. The issue of soil sterilants versus selective herbicides such as 2,4-D and others was prominent in the discussions, with the backers of each having a great deal to say.

This type of discussion was much to the liking of college agronomists who had wanted to point out the fallacy of trying to apply a "single method" treatment to cover all of the weed conditions found in the state. The very fact that discussions were held indicated that there is "room for argument."

Once both sides had fired their heaviest artillery and settled down to an armed truce, the scientists began showing them that if Idaho's weed situation improves, it will be through the most intelligent use of selective sprays, soil sterilants, cropping, and cultivation. Finally they added one other tool—education of the public to an increasingly serious problem.

How serious the situation really is unfolded as sessions progressed. Idaho's once weed-free range lands probably suffer most but least acutely. Goatweed entered in the late '30's to take over more than 2,000,000 acres of the rough ranges of the north. From 1935 to 1947, halogeton swept across southern cattle and sheep grazing lands to invade nearly 300,000 acres and is still finding new areas to infest.

Canada thistle, bindweed or morning glory, white top, leafy spurge, Russian knapweed, and many other serious perennials have cost farmers millions of dollars annually for what measure of control has been had. The largest single costs and losses are, however, due to the annual weeds —from wild oats to sunflowers. Total losses for the state are estimated at 37 to 45 million dollars annually. The figure is calculated from lost grazing and farm lands, chemical and cultivation costs, labor, poisoned animals, ad infinitum.

In the neighboring state of Washington, the annual loss to all weeds in the eastern wheat growing section alone is estimated at more than 13 million dollars. This does not include the cost of machinery used to fight the weeds.

To add to the seriousness of Idaho's weed problem came the announcement from L. C. Erickson, the agronomist who headed the program committee, that three newcomers have been added to the already lengthy list. Blue mustard, an annual infesting winter wheat areas, is fanning out from several centers of the state. Creeping European blue-bell has broken out in at least one field infestation and threatens to spread over large areas unless eradicated soon.

The weed men had a brief description of this perennial with its heavy root system and ability to spread rapidly. "It's possibly a worse weed than morning glory," said Erickson and left it at that. No Idaho farmer needs further warning.

The third weed, Dalmatian toadflax, has been in Idaho for the past two years and is showing signs of becoming much more serious. Scientists say it is a more serious threat to the range lands than goatweed and may take over just at a time when entomologists and agronomists working together had some hope of knocking the goatweed off the ranges. Introduction of the goatweed beetle about 1948 had brought the hope. Now they wonder if fighting the goatweed is wise if it is to be replaced by a more serious pest.

Ironically, the best intentioned people are spreading Dalmatian toadflax. It stands at the side of highways and its yellow flowers seem to be irresistible to motorists. Picking armloads, they haul them 50 to 200 miles down the highway until the flowers wilt, then dump them off to start a new infestation. Or, they may take the seed home with them. The whole thing is done innocently but the result is serious.

Just now the toadflax seems heading for the breaks of the Salmon, Idaho's famous "River of No Return." Once it is loose there, range men in those parts will have a new pest that they must "learn to live with."

Oddly enough, it is from such government owned lands in many areas of the state that a constant supply of weed seed flows into farm lands. Canada thistle, morning glory, leafy spurge, Russian knapweed, and a good many others moved into Idaho's forests with horse feed for early-day logging operations. Within a few years, they had established themselves along many of the rivers, creeks, and brushy draws that furnish Idaho's irrigation water. Killing them out at this late date is either impossible altogether or at least less economic than fighting the new infestations that they seed every year.

One fact that every weed supervisor knew when he came to the short course—there is no danger of his working himself out of a job. As Harold West, Idaho's commissioner of agriculture, put it, "The weed situation is getting worse year by year."

Nevertheless, there is a brighter side to the story. Listening to discussions among agronomists and weed men brings out some pertinent facts. There is more information about weeds now than there was a few short years ago. Weed men have that advantage. Farmers have killed out enormous infestations to return good land to worthwhile production and have done it on a basis of small capital outlay.

If this last really develops, if the public does become aware of the seriousness of the problem, weed men may get more support in money, personnel, and equipment in their fight against this common enemy. Without such increased support of the program, there is little chance that the weed situation in Idaho will become better.

Airplanes Do Fast Job of Fertilizing Rough Rangeland

HOPLAND, CAL. — Airplanes proved to be 20 times as fast as ground rigs in fertilizing rangelands at the University of California Field Station at Hopland in Mendocino County, California.

A 140-acre pasture on rough, rolling terrain was fertilized with complete coverage in four hours at the range research stations. With ground rigs, this same area would have taken at least 10 days, and even then coverage would be far from complete because of rough, steep ground, according to Alfred H. Murphy, superintendent in charge of the Hopland station.

On the Hopland station, fertilizer was applied for about one cent a pound. The plane carried 1,000 lb. of 16-20 nitrogen-phosphorus fertilizer per flight, and this was applied at the rate of 300 lb. per acre.

On level land, fertilizers may be applied in three different ways—by ground equipment, by injecting the fertilizer in irrigation water, or by air, Mr. Murphy pointed out.

Few rangeland areas are irrigated, Mr. Murphy said, so the choice is usually between ground and air applications. Ground equipment is practicable where terrain is level or not more than moderately rolling. Where it is steep and cut by ravines, airplanes are most feasible. But the size of the range to be fertilized and the distance from an air strip will have to be considered in deciding on methods of application, Mr. Murphy pointed out.

Exam Set to Select Entomology Chief

SACRAMENTO — The California State Personnel Board has scheduled an examination for Jan. 21, 1956, for the selection of a successor to H. M. Armitage, chief of the Bureau of Entomology. Mr. Armitage is retiring from the civil service position.

The salary range is $676 to $821 per month and all applicants must have at least five years' experience in insect pest survey or insect control and eradication. The final date for filing applications with the Personnel Board is Dec. 25.

Barley Best Bet For Diverted Wheat Acreage in Oregon

CORVALLIS, ORE. — What to do with the half-million acres diverted from wheat production in Oregon's Columbia Basin counties? Barley remains the best bet, dollar-wise, according to Oregon State College agricultural economists.

Wheat farmers with no livestock facilities, say the economists, have little to choose from when they divert the required 35% of wheat lands. Barley, first choice, will bring an estimated 20% drop in income as compared to a 50% decline if acres are left idle. But even idle acres should bring higher income than seeding the land to grass and financing livestock buildings and equipment.

Wheat farmers with established livestock facilities would also profit most by putting the diverted acres to barley instead of grass at present prices for barley and feeder cattle. The economists estimate that barley could drop to 55¢ bu. before these farmers could use diverted acres to profitably enlarge cattle operations. Put another way, feeder cattle would have to bring $22 a hundredweight before forage could profitably replace 92¢ barley on diverted acres.

A Look at a Good Fertilizer Salesman

Editor's Note: The following is an excerpt from a talk made by Dr. Guy F. MacLeod, technical vice president, Sunland Industries, Inc., Fresno, Cal., at the recent annual convention of the California Fertilizer Assn.

May I compare the business of food production to a watch or clock in which the fertilizer salesman is an important gear? He may not be the biggest gear in our clock but one bad gear can kill the usefulness of the entire mechanism. So our salesman is important. Let's look at him in detail.

His personality is the shaft on which he spins. He must be emotionally stable, of sound basic philosophy, pleasant to look at and listen to, an extrovert and mature.

Each of these characteristics is somewhat nebulous but each is capable of being defined—not in ten minutes, however. They are hereditary traits augmented by a man's environment not the least of which is his education.

Technologically our perfect gear will have within his metal all possible training in scientific fields and he will continue to grow throughout his life. If he has training in soils and plant science he will have the basic handmaidens of those sciences—chemistry, physics and mathematics.

He needs to know the fundamental theories to properly interpret them for practical use and to keep abreast of rapidly expanding knowledge. A good salesman, in contrast to a good research man, should know a little about a lot of things rather than a lot about a few things.

With good bearings and finest of metal our gear is useless until it is fitted in a practical manner to its particular spot in the scheme of the clock. For the fertilizer salesman this means he must be a dedicated member of the team. He himself must be sold beyond redemption on his company policies and personnel. He must feel that his territory and his job are more important than any others in the world for him.

He must see opportunities where they do not exist, must worry continuously about his problems, enjoy his work as much as his vacation, aggressively plan his life around the agriculturalists in his area and do twice as much as any competitor.

If he happens to have grown up on a farm in the area which he serves it may help.

There, in brief, is our important cog, the fertilizer salesman. An outstanding personality among all men, a genius in the field of technology, a practical American farmer endowed with all the Yankee instincts that made this country great from its inception to now.

Texas County Gets Soil Testing Laboratory

SEYMOUR, TEXAS — The Baylor County soil testing laboratory that was opened here recently is the first one to be set up by the Agricultural Extension Service outside of the College Station area. The local laboratory will be available to all farmers and ranchers in this area who want to test their soil.

The laboratory was set up and the equipment calibrated by M. K. Thornton, agricultural chemist on the Texas Agricultural Extension Service staff. He also spent some time training Roy McClung, Baylor County agricultural agent, and Mrs. Mary Ann Boone, special technician.

Plant Nutrients Evaluated at Maryland Manufacturers and Dealers Conference

COLLEGE PARK, MD. — Practically all soils in Maryland are deficient in boron in relation to the crops that require this element, Dr. J. H. Axley, associate professor at the University of Maryland told the conference for fertilizer dealers, manufacturers and salesmen here recently. Alfalfa, he said, requires more boron than do most other crops, since it is necessary for the movement of sugar from the leaves of the plant to its root system.

On the other hand, he said, manganese, copper, molybdenum and zinc are in ample supply in most soils in the state, although there are some areas in which manganese is deficient. Molybdenum, on the other hand, is over-abundant in many parts of the state.

Dr. R. W. Krauss, assistant professor of plant physiology, pointed out that by knowing a little more about how plants absorb nutrient elements, farmers are in a better position to know what nutrients to apply and how best to apply them.

He said the root tips must actually work to absorb nutrients. Plants do not "soak up" nutrients as many people believe. Moreover, new organic compounds have recently been found to aid the plant in absorbing trace elements such as manganese and zinc from the soil. These chelate compounds are under study in the university's botany department.

Citing his doctoral theses, in which he studied the effect of cover crops on yield and quality of tobacco, Dr. G. L. Steffens of the agronomy department said under all considerations, the best results were obtained when he used a combination of legumes and non-legumes rather than using either of the two separately.

One of the best combinations, he said, was a cover crop of wheat and vetch. Combinations of rye grass and vetch and winter oats and vetch also produced a high quality tobacco, Dr. Steffens said. The wheat and vetch combination also produced the best dollar per acre return, he found. Nitrogen is important for good tobacco but care must be exercised in applying it.

Dr. A. M. Decker, assistant professor of agronomy reported that after a three-year study the cheapest way to maintain a good pasture is to use a good legume mixture. If the legume is lost because of drouth or disease, a farmer can economically apply a good commercial nitrogen fertilizer to reestablish his field.

Using five grasses—orchard grass, tall fescue, reed canarygrass, tall oat grass and Kentucky blue grass—the first four in combination with ladino clover and white Dutch clover with the latter, Dr. Decker said that nitrogen on pure grass stands resulted in increased yields and greatly reduced weeds, and nitrogen applied to a mixture of grass and clover resulted in a very small over-all increase. It was found, however, that the grass increased and the clover decreased.

Addition of nitrogen had no effect on protein content in either the mixtures or in the individual grasses, he said, but added that the protein percentage was increased when the grass was grown with clover rather than grown alone.

In tests using rye as a cover crop in a rotational program with vegetable crops, Dr. L. E. Scott, professor of horticulture found that by applying fertilizer, growth of the rye was increased and the mineral content of the rye—(nitrogen, phosphorus, potassium content)—was almost doubled compared to the non-fertilized plots.

Dr. Scott said this means that by fertilizing the rye cover crop we are incorporating in the soils more organic matter with a high mineral content which is used by the vegetable crops. Sandy soil, typical of Maryland's vegetable areas, was used in the experiments.

Dr. K. G. Clark, U.S. Department of Agriculture at Beltsville, Md., in talking about liquid fertilizers, said they are uniform, competitive in cost, easily applied, and spraying equipment is reasonably inexpensive.

In a rotation experiment now under progress, Dr. Edward Strickling, assistant professor of agronomy, found that neither continuous corn nor continuous soybeans with high fertilizer applications and with a green manure crop are maintaining the organic matter content of the soil.

Dr. O. E. Street, professor of agronomy, displayed several samples of tobacco showing the ill-effects of chlorine on the leaf. The main vein or midrib of the leaf was enlarged and whitish in color. Chlorine also reduces the fire-holding capacity of tobacco, Dr. Street said.

Olin Mathieson Opens New Branch Plant in Kansas

HUTCHINSON, KANSAS — A branch plant will be opened here by the Olin Mathieson Chemical Company of St. Louis, Mo. The company manufactures and distributes fertilizer supplies and aluminum irrigation equipment. In addition to the 16,000 square-foot building, the firm also has leased an acreage adjacent to the building for expansion.

The firm expects to employ 20 persons at the outset. A similar plant is operated at Little Rock, Ark. General manager is George La Rock, formerly of Columbia, Mo., and sales supervisor is Robert H. Berkley.

Increased demands for irrigation equipment and fertilizer prompted the opening of this branch plant, the company says.

Fertilizer Boosts Rose Clover Forage Output in California

BERKELEY, CAL.—The use of chemical fertilizers on rose clover has substantially increased forage production, according to scientists at the University of California's agricultural college in Davis.

William A. Williams, assistant professor of agronomy, reports that rose clover nearly doubled forage production in the past two years on rangeland in Stanislaus County, and when fertilized with sulfur and phosphorous the total forage yield was nearly tripled.

Before the range plots on the Dolling Ranch at La Grange, were seeded to rose clover, the native plants produced about one-half ton of dry feed.

Fertilization of the legume seeded range also increased the quality of the feed, Mr. Williams has found. He has explained that the improved range produced about 12% protein, nearly three times more than from unfertilized resident forage.

The Davis agronomist, working with R. J. Arkley, associate soils specialist, on the Berkeley campus, and W. N. Helphinstine, Stanislus County farm adviser, seeded a test plot to rose clover in October, 1952, and fertilizer plots were set up the following year.

MOSQUITO PROGRAM

NEW BRUNSWICK, N.J. — The New Jersey Agricultural Experiment Station has requested an extension in 1956 of the short mosquito abatement program to inland counties at a cost of $46,000.

AMMONIA CONTRACT SIGNED—A. W. Mohr (center), president of the California Spray-Chemical Corp., signs a contract with Agricultural Ammonia Service, Inc., whereby Agri-Serv becomes the sole authorized distributor of Ortho Ammonia throughout the San Joaquin Valley and the coastal counties of Los Angeles, Ventura, and Santa Barbara. Looking on are F. M. Stewart (left), vice president and general manager of Agri-Serv, and C. E. Cody, western regional manager of marketing for Calspray.

CALSPRAY

(Continued from page 1)

manufacturers and distributors of pesticides. The "Ortho" trade mark is known to farmers in many parts of the world.

Agri-Serv, with headquarters in Santa Paula, Cal., pioneered in the modern bulk handling of NH_3 for California agriculture. It thus enters this new marketing arrangement with broad experience in the field.

Ammonia produced from Calspray's $16,000,000 fertilizer plant at Richmond, Cal., will be moved with the most advanced distributing and marketing techniques to get this nitrogen source to the farm consumer. The capacity of Agri-Serv's storage, distribution and application facilities throughout California will be more than doubled to provide the most efficient grower service possible, the company says.

Agri-Serv will also increase its present staff of skilled consulting, servicing and application personnel. By the same token, Calspray expects to place in the field a staff of trained field agronomists who will be available to advise farmers on fertilizing problems.

Ammonia has been used as a fertilizer for many years in California, but a tremendous increase in the use of this product has come about in the last five years following the development of new techniques and equipment for the direct application of the product to the soil.

NEW TOBACCO VARIETY

WASHINGTON—Release of a new variety of flue-cured tobacco—Dixie Bright 244—highly resistant to fusarium and bacterial wilt, and moderately resistant to black shank, was announced jointly recently by the U.S. Department of Agriculture and the North Carolina Agricultural Experiment Station. A considerable quantity of seed of the new variety will be available for distribution to farmers through the North Carolina Crop Improvement Assn. at Raleigh. The supply is deemed adequate to meet all anticipated requirements in the flue-cured tobacco production areas for the 1956 growing season.

AAI LEADERS—Gen. Ralph H. Wooten, Memphis, seated center, is the new president of the Agricultural Ammonia Institute chosen at the recent annual convention and trade show in Kansas City. Other new officers and men comprising the executive committee of the organization surround him above. They are, standing left to right, Mike H. Carter, Farmers Supply Cooperative, Greenwood, Miss., secretary; L. H. Wright, Phillips Chemical Co., Bartlesville, Okla., executive committeeman; M. O. Rasberry, Mid-South Chemical Co., Inc., Helena, Ark., treasurer; and M. C. Craft, executive committeeman and immediate past president; Seated at the left of Gen. Wooten is first vice president Tully Talbot, Chemco, Inc., Audubon, Iowa, and to his right is Charles M. Corken, Corken's, Inc., Oklahoma City, second vice president. For the story of the convention see page 1 of the Dec. 12 issue of Croplife.

WORLD REPORT

By GEORGE E. SWARBRECK
Croplife Canadian and Overseas Editor

Weed Laws Have Teeth

Canada's prairie provinces have "teeth" in their weed control legislation but field workers would rather not apply, or threaten to apply, penalties to weed-ridden farmers, a panel of extension workers told the recently-held eighth Canadian Weed Control Conference at Regina, Sask.

Members of the panel were Prof. Rupert Ramsay, extension director, University of Saskatchewan; Fred Magera, district agriculturalist, Willingdon, Alta.; Alan Rugg, agricultural representative, Wilkie, Sask., and R. E. Forbes, agricultural representative, Pilot Mound, Man.

The extension workers said they preferred to catch the farmer before his weed problem becomes too severe and educate him in good weed control practices.

H. W. Leggett, supervisor of the Regina Experimental Farm, told the conference that no chemical has yet been developed that will satisfactorily curb wild oats in cereal crops, but with good weather and proper cultural practices it is possible to keep Canada's No. 1 weed under control. A heavy infestation of wild oats, he said, can cut the yield of a grain crop by as much as 25%.

Dr. W. G. Corns of the University of Alberta's plant science department said there is a basis for hope that a chemical will be developed to control wild oats. In his opinion, an early foliage spray would be ideal for the purpose.

Dr. Corns considers that more effective chemicals are needed for such annual weeds as chickweed, hawksbeard, hemp nettle and wild buckwheat.

Superphosphate in Rhodesia

African Explosives & Chemical Industries, Ltd., through its Rhodesian subsidiary, is to manufacture superphosphate at Rodia, near Salisbury. Construction of the new plant will start at once.

The Rhodesian company is to continue the manufacture of compound fertilizers, and a granulation plant is being installed at Rodia to produce fertilizer products in granular as well as in powder form. These plant extensions, which it is hoped will be completed by about 1958, will represent a capital investment equivalent to $8.4 million.

Hitherto, superphosphate has been imported from the Union of South Africa and from overseas sources, but the new plant in Rhodesia will have an initial capacity to meet the full requirements of superphosphate, both single and triple-super, for fertilizer purposes, in the territories comprising the Central African Federation for some years to come.

The two parent companies behind the A.E. & C.I. organization are De Beers Consolidated Mines and Imperial Chemical Industries, Ltd.

Progress at Sindri

The third annual report of the government-owned Sindri Fertilizer factory in Bihar, India, presents a picture of increased production and deliveries during the year 1954-55.

Planned is a capacity increase of 60% within the next three years. This will provide two new fertilizers —urea and amonium nitro-sulfate—using coke oven gas.

Production of ammonium sulfate during the year hit a new high of 299,983 tons, against 249,953 tons in 1953-54. Deliveries totaled 337,969 tons against 271,844 tons a year ago. The factory broke all previous production records in October when it produced 30,384 tons of fertilizer in October. The average production of fertilizer a day during that month was 980 tons. The factory set up another record by turning out 315 tons of ammonia on Nov. 1.

Venezuelan Needs

The government of Venezuela is aiming at industrial self sufficiency. It also aims at growing as much of its agricultural needs as the climate will allow. Wheat, malted barley, oats, temperate zone fruits, certain cheeses and wine cannot be produced, but for those products that can be grown work is to be intensified.

The government's petro-chemical industry is helping in this march towards self-sufficiency. Today it provides 16,500 tons of fertilizers. The object is to attain an output of 165,000 tons every year. The technicians say it can and will be done. The result will be a cutback in imports though the rising population means an ever-expanding economy and a consequent greater demand for food.

Mexican Sulfur

During the first six months of this year Mexico exported 40,000 tons of sulfur from the new plants in the state of Vera Cruz. It is expected that exports will be considerably higher in the second half of this year. Why? Because the Mexican producers are making efforts to tell world buyers that their sulfur is of the highest quality.

Hop Disease

The existence of the hop disease Verticillium is reported from the experimental hop garden of England's Wye College in the county of Kent. This is serious for the beer-loving Englishmen. The college is to continue its research work in uninfected gardens. To safeguard the valuable plant breeding material quarantine gardens are being established on sites far removed from any hop growing area. Spread of the disease is thought to occur mainly through the movement of infected plant debris and soil on boots and by farm vehicles and implements.

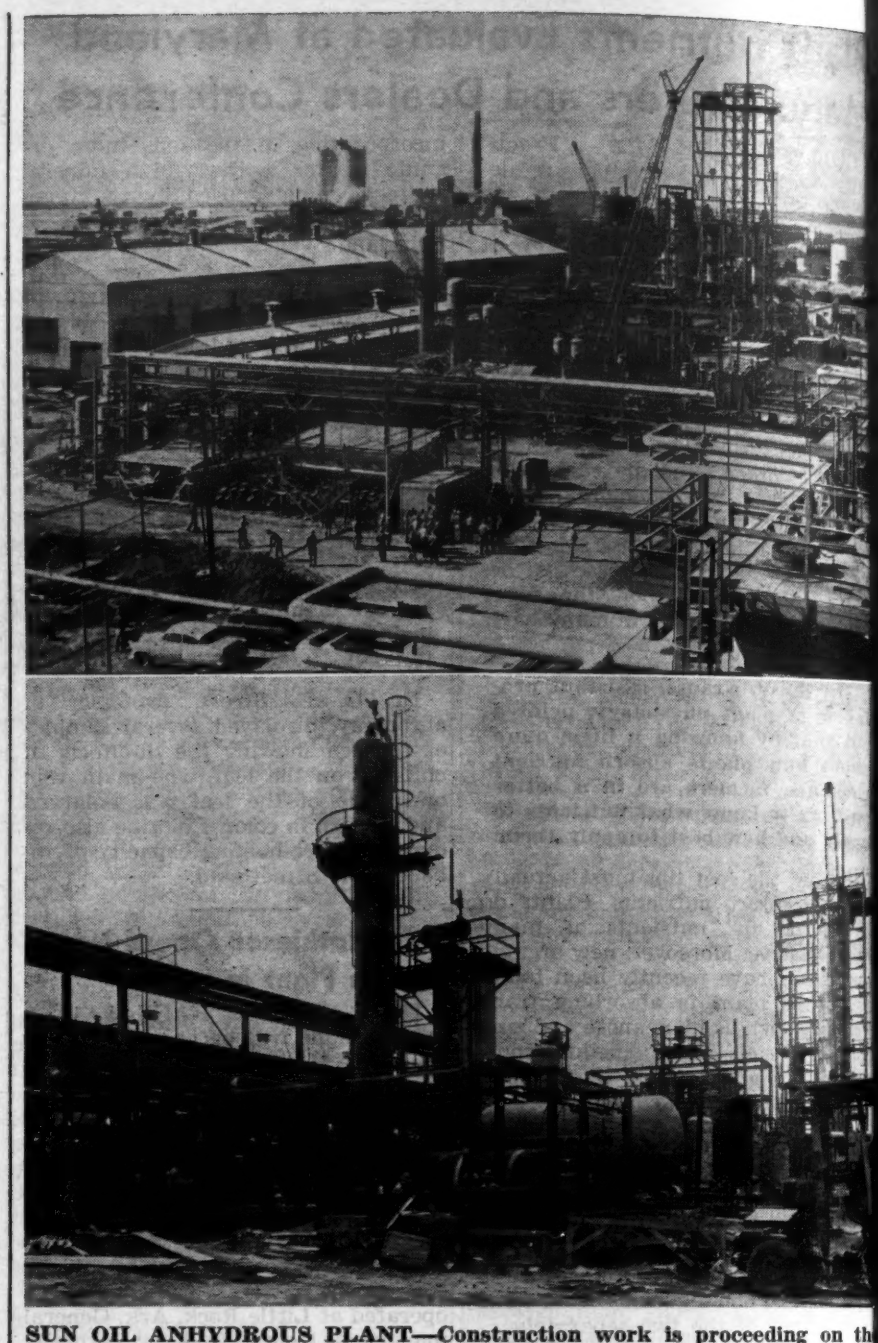
Corn Billbug Control Expected After Another Year of Testing

FLORENCE, S.C. — Vernon M. Kirk, associate entomologist at the Pee Dee Experiment Station, said here he anticipates having an insecticidal control for the corn billbug ready for recommendation after one more season's testing and research.

His announcement was made in commenting on an article by him which appeared in the latest issue of South Carolina Agricultural Research.

Until the insecticidal control is ready, however, present recommendation for control "remains one of rotation in such a way that corn is planted at a distance from the infested field."

He said that "billbugs are probably responsible for more loss of stand in corn than any other insect in our state. . . . Yield can be cut down to a couple of bushels per acre, even though you may have planted over two or three times in an attempt to get a stand."



SUN OIL ANHYDROUS PLANT—Construction work is proceeding on th Sun Oil Co. $9 million anhydrous ammonia plant at its Marcus Hook (Pa. Refinery. The plant, with a design capacity of 300 tons a day, will be o stream by Jan. 1, 1956, the firm reports. The plant will utilize an iron oxid catalyst and operate at up to 4,200 lb. per sq. in. pressure. Ammonia wi be synthesized by combining by-product hydrogen with nitrogen that ha been separated from the air at temperatures ranging beyond 300° below zer One of the two catalytic reforming plants, which will supply the by-produc hydrogen, produces the aromatic chemicals benzene, toluene and xylene The other, completed this past August, produces high octane gasoline com ponents. Whereas nationally only three out of every ten tons of anhydrou ammonia are consumed in industry, better than three fourths of the outpu of Sun's new plant is expected to find industrial application as a result of th plant's location in a highly industrialized area, the firm reports.

Potato Advisory Group Urges More Basic Research

WASHINGTON—Expanded fundamental research—on enzymes, chemical constituents, storage and handling conditions, and other factors influencing potato quality from field to finished consumer product—is needed to aid growers and processors to extend market outlets for this crop, says the U.S. Department of Agriculture's Potato Research and Marketing Advisory Committee.

Meeting in Washington recently, the committee urged also that the department undertake additional work (1) on evaluation of new sources of germ plasm for potato breeding and on new disease-resistant and insect-resistant varieties, (2) on improved processing of present potato products, and development of new, easy-to-use consumer food items from potatoes, and (3) on methods and facilities to reduce costs and maintain quality during market distribution of the crop.

In the area of production research the committee indicated the following top-priority needs for new or expanded work by the department:

Provision of additional research personnel at the Inter-Regional Potato Introduction Station, Sturgeon Bay, Wis., to permit more rapid evaluation of potato introductions available at the station from all part of the world. Studies of the genetic and breeding of potatoes resistant t insects and diseases, and with bette eating, marketing, and processin qualities.

Research on the control of potat diseases, with special attention to th role of insects as disease carriers, an investigations of the effects of pro duction practices on soil-borne dis eases of potatoes.

Expansion of present potato-intro duction work; increased fundamenta research on use of herbicides and o the role of other environmental fac tors influencing yield, maturity, an quality of potatoes; study of pesticid residues on potatoes and in soil where the crop is grown; and in creased attention to nematodes as pest of the potato crop.

HITCHCOCK PROFESSOR NAME

BERKELEY, CAL.—Dr. Elvin C Stakman, internationally know plant pathologist, has been appointe University of California Hitchcoc Professor, according to a recent an nouncement by Clark Kerr, chan cellor. Dr. Stakman is now a pro fessor of plant pathology emeritu at the University of Minnesota. H lectures as Hitchcock professor co cern various aspects of plant di ease, the world's food supply, inte national cooperation in scientific r search, and scholarship in the ac demic world today.

Dealer Should Insist Upon Full Fertility Program on Farm, Minnesota Group Told

ST. PAUL, MINN.—Both the potentialities and responsibilities of the fertilizer dealer were aired by a number of speakers appearing on the Dec. 5 program of the Soils and Fertilizer short course held here under the auspices of the University of Minnesota's Institute of Agriculture.

Despite below-zero temperatures and hazardous driving conditions, the Coffey Hall auditorium was completely filled with dealers, fertilizer manufacturers, agronomists and others interested in the soils program.

Dr. W. P. Martin, professor and head of the Department of Soils of the university, presided at the morning session, and Dr. W. M. Myers, head of the department of agronomy, was in charge of the afternoon program.

The importance of accurate soil tests was emphasized in a talk by John Grava, supervisor of the soil testing laboratory, Department of Soils. He declared that the soil test is the bridge that connects the university with the farmer. Teamwork is required to make the most use of soil testing and every member of this "team" is an important link, he said. These team members include the university or experiment station personnel, the fertilizer dealers, the manufacturers, and county agents.

Dr. Grava showed slides on the screen illustrating best methods of taking samples and also of the most accurate equipment available for analyzing the chemical content of such samples.

Dr. W. L. Nelson, midwest manager of the American Potash Institute, Lafayette, Ind., discussed some further factors involved in soil tests, pointing out how the university soil testing laboratory can aid the fertilizer industry. Getting a good representative sample is the main bottleneck, he said, but when this is done, it makes possible the recommendation of most efficient amounts of plant food for the particular area.

Dr. Nelson said that with proper tools and "know how," dealers and salesmen can take samples through the summer and fall months, prepare work sheets for various farms in their territory and thus become local authorities on what fertilizer requirements are for a given place.

This information can be helpful to the dealer in stocking the right grades of fertilizers and when the correct combinations are applied, results will be good.

Since good results are so essential to subsequent sales, Dr. Nelson advised the dealers present to insist upon the application of lime, when needed, before the fertilizer is put on.

The soil tests, he pointed out, give accurate information as to the acidity of the ground and if lime is indicated, it should certainly be put on in order to assure optimum results from the plant food. Dr. Nelson said that he has known dealers who refused to sell fertilizer to farmers unless the buyer agreed to put lime on the land first.

"Problems in Fertilizer Recommendations" were covered in a talk by Carl Ash, county agriculture agent from Crookston, Minn., who related some of his experiences as a county agent in connection with "selling" correct grades of fertilizers for his area. He said that if the farmer uses the wrong grade of plant food, "he is throwing away his money" and the poor results will cool his ardor toward the value of fertilizer. "Such an instance does not help out in the farmer's battle in the cost-price squeeze," he added.

Mr. Ash lauded the medium of television as a "school" to educate people on the farm to do a more efficient job of raising crops and in making use of all the chemical tools now available for this purpose. "Television," Mr. Ash declared, "is the best thing that ever came down the pike for educational purposes. It reaches the hard-to-convince farmer right in his home and gives him information that he might not get otherwise."

Dr. L. B. Nelson, head, eastern section, Soil and Water Management Section, Agricultural Research Service, USDA, Beltsville, Md., emphasized the role played by climate in fertilizer use. Climate is the key to success in fall fertilization, he said, since the amount and time of rainfall in a given area are a critical factor in determining the amount of leaching that might be expected overwinter. Thus, it is a local situation and decisions on the efficacy of fall applications of plant food should be made on that basis.

The depth of application of fertilizer materials also has a bearing on losses that might come through erosion. In this case, the nearer the fertilizer is to the surface of the ground, the more vulnerable it is to erosion. Thus, it would be wise to apply fertilizer to some depth in the soil, when put on in the fall.

Along the same line, Dr. Nelson said that fall fertilization should be avoided on steep slopes or on land subject to erosive action. In this case, both climatic conditions and the terrain must be taken into consideration when plans are made for fall fertilization.

The afternoon session, under the chairmanship of Dr. W. M. Myers, head of the Department of Agronomy, featured four speakers. G. R. Blake, associate professor in the Department of Soils at the University of Minnesota, presented a paper, "Fertilizer and Soil Structure," in which he emphasized the relationship of types of soils found in the upper midwestern area and grades of fertilizers best suited for this situation.

A Minnesota farmer, L. C. Boler, told the group the story of "How I Grow Corn." He indicated that complete fertilization really pays off and that following recommended practices is well worth while.

Mr. Boler said he keeps a complete record of the soil on his farm, based on pictures of various fields taken from the air. These shots reveal many important features that escape observation from the ground, and make it possible to solve drainage problems and soil fertility problems accurately. The farmer said that his check plots in the midst of grain fields tell a remarkable story, since they show up so distinctly from the air.

A Nebraska banker, J. R. Kenner, Hebron, Neb., presented his viewpoints on the economics of fertilization, declaring that the application of fertilizer materials to farms has introduced an entirely new factor in finance. "Fertilizer is a must in producing more per acre at less cost," he said.

The banker mentioned a number of "rules of thumb" against which loans are made to farmers for fertilizers. In the first place, he said, his bank insists that the applicant must have soil tests made as evidence to the bank that the right kind of material is to be used. "Without the information gained from soil test analyses, the farmer may waste his money," Mr. Kenner said.

Another rule of thumb mentioned by the banker was that the farmer must give the land the full treatment of nitrogen, phosphate and potash as well as lime, if the latter is needed. He insists that the grower avoid "shotgun" applications and that he continue his fertility program for more than a single season.

On the subject of fall fertilization, Mr. Kenner told the group that dealers stand to gain much by promotion of this practice. They can do a better job in the fall of the year when the pressure of springtime is lacking, he said. The dealer is just too busy in the spring to give as much attention to the farmer's individual need as he can in the fall.

Agricultural bankers are "distressed" at seeing so many fine young people leaving the farm. He said that this fact is a great loss to agriculture, but that the competition from industry is likely to continue for a long time.

Final speaker on the program was Dr. J. M. MacGregor, associate professor, department of soils, who presented some new information on nitrogen use based on experiments made during the past two seasons. He said that the residual effect of fertilizer applied in 1954 made up to 10 bu. more oats an acre in 1955. He also reported that 60 lb. anhydrous ammonia an acre applied either in the fall of 1953 or spring of 1954, not only increased the 1954 corn yield, but boosted the 1955 oat yield on the same land up to 10 bu.

The Minnesota soils expert said that there was no difference in effectiveness between spring and fall applications of fertilizer. He declared that in spring fertilizing, April applications were compared with equal applications made in May and June, but no important differences in yield were found between the three application times.

Dr. MacGregor also reported results from soybean fertilizing studies, pointing out that an already fertile field—for example, one that would yield 110 bushels of corn in 1954—would not be noticeably benefited, yield-wise, in its 1955 soybean production.

He told of a low-fertility field in which part was left unfertilized—giving a 60 to 70 bu. corn yield. A second part of the field was fertilized with 60 lb. anhydrous ammonia an acre. Result: corn yield rose 18 bu. an acre and 1955 soybean yield went up five bushels—that is, 15 bu., compared to the 1954-unfertilized field's 10 bushels.

Pesticide Developments Outlined in New Book By California Scientist

BERKELEY, CAL.—Technical developments behind the expansion of chemical insect control from crude tobacco sprays to a multi-million dollar industry are summarized in a new book by Dr. Robert L. Metcalf, chairman of the entomology department of the Riverside campus of the University of California.

In less than 200 years, more than 100,000 organic chemicals have been evaluated as potential insecticides with more than 100 of these in current use, Dr. Metcalf says.

Written primarily to aid other scientists in expanding knowledge of insect toxicology, the book, "Organic Insecticides—Their Chemistry and Mode of Action," analyzes the relation of chemical structure within plants and animals, and their hazards to humans and animals.

The "unprecedented development" of DDT as a synthetic insecticide is traced by the author, who points out that "even the disadvantages of its use such as minor upsets in the biological balances of organisms, the development of resistance in the house fly and other species, and its affinity for lipids which results in storage in animal fats, have greatly broadened our knowledge and understanding of the factors controlling the abundance and distribution of organisms, and the metabolism and bio-chemistry of synthetic substances."

A chapter is devoted to the development of resistance to insecticides, which the author believes may result from the selection of the most resistant individuals in a population (with the chemical as the selective agent) or by a specific interaction between the chemical and the organism to produce a resistant adaptation.

Dr. Metcalf is currently conducting extensive research on the mode of action of insecticides.

SOIL BUILDERS AWARD—Winners in the National Plant Food Institute's annual soil builders award for editors' contest were honored at the winter meeting of the American Agricultural Editors' Assn. held in Chicago recently. Principals in the awards ceremony, left to right above, were Louis H. Wilson, secretary and director of information for the Institute, who presented the awards; Earl W. McMunn, immediate past president of the association; George Johnson, associate editor of Successful Farming, winner in the category of magazines with more than 800,000 circulation; Homer Fine, associate editor of the Nebraska Farmer, who received the award on behalf of the magazine's managing editor, Carl Deitemeyer, in the class of magazines with less than 800,000 circulation; and Thomas J. Anderson, editor and publisher of Farm and Ranch-Southern Agriculturist and newly-elected president of the association. Mr. Johnson and Mr. Deitemeyer were honored as two of the nation's outstanding agricultural writers who most effectively carried the message of soil building to their magazine readers.

MEMPHIS MEETING

(Continued from page 1)

22¢." It was shown, too, he said, that on a profit-per-acre basis, the same farmer's net income could be increased from $15.51 per acre to $56.94 by using proper kinds and amounts of fertilizer.

Dr. M. K. Horne, Jr., National Cotton Council, told the conference that, "We have to face it: American cotton is in deep trouble."

He said that a formula for a remedy must include price, research and promotion. "The upward trend in yields—emerging as a new symbol of our great technological potential—is one of the brightest signs that have risen on cotton's horizon for a long time," he said.

Dr. Horne told the conference that the farmer's cost will decline and his net income will increase if the industry can get the market on a gradually expanded basis through the formula of price, research and promotion.

Specific Techniques Stressed

Efficient management of a cotton farm today demands a wise integration of recommended growing practices and a thorough knowledge of each one individually, Dr. William L. Giles, superintendent of the Delta Branch Experiment Station, Stoneville, Miss., told the conference.

Land must be prepared in full awareness of specific planting techniques to follow. Seed should be planted so as not to hamper effective weed control later, or efficient harvesting methods further along in the season. Machines should be operated intelligently and carefully in order to complete each production phase effectively, so that one phase will enhance the next. Weed control, insect control, defoliation and fertilization must be fitted into an over-all "package" of practices.

Agricultural water demands are rapidly moving eastward because of increased interest in supplemental irrigation in humid areas of the cotton belt, Dr. Morris E. Bloodworth, soil physicist of the Texas Agricultural Experiment Station, told the conference. He said that present-day irrigated agriculture is a science and includes all aspects of production.

If the cotton farmer could plant seed covered with a chemical which would protect the seed and, in addition, be taken up into the seedling rendering it resistant to attack by disease organisms, many problems would be solved, Dr. N. D. Fulton, University of Arkansas plant pathologist, said.

Dr. Fulton said that he had hope that pathologists may find a way to control plant diseases by systemic fungicides. He said work here and in England indicates that compounds of systemic fungicidal activity exist. Antibiotics such as penicillin and Streptomycin and several others have been used.

Nematodes a Menace

Dr. A. L. Smith, USDA plant pathologist, reported that wilt losses in some areas have been reduced to the vanishing point by widespread use of resistant varieties. However, losses from nematode diseases now are seen as a greater menace than wilt, and the nematode problem is getting priority attention, he said.

In addition to the use of resistant varieties, he also listed the following as means by which cotton growers can reduce losses from wilt and nematodes:

(1) Use of soil fumigants on severely infested soils.

(2) Rotations with corn, sorghums, small grains, and other crops.

(3) Application of sufficient fertilizer to maintain maximum yields with sufficient potash to prevent rust.

The wilt disease infests all the lighter soils from Virginia to the 40-inch rainfall line extending north and south through eastern Texas and Oklahoma. The nematode disease extends throughout this area and on westward in the lighter soils of the irrigated states, including New Mexico, Arizona and California. "Fortunately, most of the western soils are heavy, otherwise the problem would be much more serious in those states," Dr. Smith said.

Cotton variety strains that offer high-level resistance to verticillium wilt disease have been developed though the research for major gene resistance still goes on, Alfred B. Wiles, plant pathologist at State College, Mississippi, told the conference.

"The possibility of using irradiation as a means of developing a source of resistance is being considered. It has given promising results in the case of another crop. The problem that we face is this—not to develop a cotton with verticillium resistance as its chief trait, but rather to add, if possible, this extra bit of quality to our already fine cottons of the rain belt," Mr. Wiles said.

A cotton farmer can literally lose his shirt because of damage from boll rots, John T. Presley, plant pathologist of USDA's Agricultural Research Service, told the conference. He said that boll rots cause 25-30% of the crop to be lost in certain humid areas of the southeast and in excessively rank irrigated cotton. "It is known that it takes 200 bolls to make a shirt so a farmer can lose his shirt over and over again on every acre of cotton where the boll rots are severe," Mr. Presley said.

The best way to control this problem is through practices which reduce or prevent the occurrence of favorable conditions of moisture and temperature under which boll rots develop, the speaker said.

Follow-Through Important

"To do this we must begin with the chemical treatment of planting seed and follow through until the crop is harvested. Seed-borne organisms which cause blight and anthracnose infect the seedlings and later may attack the bolls causing rots and stains," the speaker said, adding that a good program of crop residue destruction should also be followed since little is gained if treated seeds are planted in a field where diseased stalks and bolls are left on the surface.

"It has been estimated that costs of controlling weeds represent from 25 to 35% of the total pre-harvest production costs to cotton growers in the southeastern United States," Dr. W. B. Ennis of the U.S. Department of Agriculture, State College, Miss., said at the conference. He pointed out that while remarkable progress has been made in the use of chemicals in weed control, there is still a great need for reappraisal of current research on the problem.

In urging more research, Dr. Ennis pointed out that "little or nothing" is known about what happens to herbicides absorbed by the cotton plant.

"Are they inactivated in the plant? If so, how does the process occur? Are there interactions between the chemicals and other parts of the plant? What is the importance of residues or by-products within the plant? Do weeds and cotton plants react differently to chemicals? How?

"These," said Dr. Ennis, "are just a few of the questions that need answers."

Various herbicidal oils can give satisfactory control and finally eliminate Johnson grass in cultivated crops, it was reported by Dr. Walter K. Porter, Jr., pathologist at Louisiana Agricultural Experiment Station. He told conferees during a panel discussion meeting that data from Texas cotton areas indicate from 4 to 6 spot-oilings of Johnson grass clumps will eliminate up to 95% of this weed in one year.

Cost-wise, he said, the number of clumps varies from acre to acre and so it was not possible to strike an average cost per acre for treating. However, in one experiment, 330 acres were spot-oiled five times at a cost of $4.40 per acre for labor and materials. In another experiment, six spot-oilings cost $14.10 per acre and eradicated 86% of the clumps.

Hoeing, on the other hand, cost from $5 to $7 per acre and did not reduce the infestation. Moreover, the hoeing operation caused severe crop stand reduction and also allowed the Johnson grass to seed after lay-by time.

He said the conclusion had been reached that while the spotting method may be more expensive than hoeing, it practically eliminated the Johnson grass clumps in one year. Therefore, over a period of years the grower will realize a considerable saving in labor costs.

Regarding the pre-emergence concept of weed control, Dr. Porter reported extensive field studies have been made to determine a sound program involving the use of CIPC or Karmex DL, two pre-emergence herbicides for cotton. While neither of these could be expected to give complete control of all weeds, the experiments were made to use them as another cultural tool to reduce hand labor, not to eliminate it, he said.

Simplicity Needed

"There still remains the need for an early post-emergence chemical which does not require precision application and at the same time affords a moderate degree of residual control of weeds. Continuing effort is being made in this direction," he said.

Another weed problem which occurs to some extent in the Mid-South and to a significant degree in the West relates to annual morning glory infestations, Dr. Porter said. Chemical control of this weed, which may entangle the cotton plant to the point that machine picking is impossible and hand picking is made extremely difficult, has not been effective in the south, and continuous use of flame, while it leaves much to be desired, remains the best control method in that area. However, reports from the west indicate that Karmex W, when applied just before the last cultivation, will give practical control of this weed, he said.

In the case of nut grass, still a persistent problem in many cotton fields, Dr. Porter reported there has not been any chemical program yet developed that will solve this problem. However, he said the effects of the chemical, amino triazole, on nut grass appears to warrant continued studies on the possibility of its use as a control agent.

Weed control is the last and the hardest gap to bridge before complete cotton mechanization can be achieved, Chester G. McWhorter, agronomist, and O. B. Wooten, engineer, of the Delta Branch Experiment Station, Stoneville, Miss., told the conference. The two cotton specialists, in a joint presentation, pointed out that not only is weed removal by hand labor expensive, but failure to remove weeds results in lower yields, lower grades, and reduced cash return per acre.

They reported to the conferees that a two-year production study by the Delta Branch Experiment Station showed 57-60% of pre-harvest labor requirements were attributed to weed control when several chemical and cultural practices were combined. When only cultivation and hoe labo were used, 82-93% of pre-harve labor requirements were attribute to weed control.

They indicated that either a pr emergence treatment or possibl cross-plowing should be considered a weed control insurance. "Unde drouth conditions, when weed infe tation is light, tests show productio costs with these practices have bee slightly higher than conventional cu tivation and hoe labor. When wee infestations are severe, however, ad ditional savings can be realized fro these practices," they said.

No pesticidal chemical is offered to cotton farmers until it has undergone four to five years of research at an estimated cost of $1½ million, W. C. Dutton of the Dow Chemical Co., Midland, Mich., told the conference. He said that despite this huge outlay of time and money on the part of industry, the final development of agricultural chemicals is a matter of teamwork with public research organizations.

Chemical manufacturers, said Mr Dutton, have shouldered most of th responsibility of checking out chemi cals thoroughly before they hit mar kets, so they will be safe and effec tive for the farmer's use.

Greater Profit Seen

Public research organizations the perform the important function o developing the products into a high er state of usefulness, exploring thei possibilities and limitation so tha the farmer will profit even more fro their use.

Mr. Dutton outlined the many step of the painstaking testing procedur necessary before chemical product reach the market to help farmer combat insects and disease, and t help them defoliate plants to mak harvesting easier and more efficient

Though tests are inconclusive t date, the future looks bright fo cotton insecticides which are applie to the seed and then distribute throughout the plant by systemic ac tion, according to C. F. Rainwate of USDA's entomology researc branch. He said there are alread some systemic insecticides that ar highly effective against most early season cotton insects.

In concluding his report, Mr. Rain water said seven new systemics ha been found in the laboratory whic are highly effective against aphid and spider mites on cotton when ap plied as seed treatments. Two ne compounds were found which appea promising against thrips, and fiv which appear promising against th boll weevil.

New and more potent insecticide are needed to control insects tha damage cotton, Dr. F. S. Arant o the Alabama Polytechnic Institut said. Reporting on recent insecticid research, Dr. Arant said that th boll weevil, the boll worm, and som other major pests still must be con trolled with non-systemics.

"May I be bold enough to suggest that it might be better to recommend a schedule of cotton insecticide applications based on calendar dates or number of days from planting than to rely on most planters' opinions?" That suggestion came from J. C. Gaines, entomology department head, Texas A&M College. He said investigation has revealed that many planters do not know, or will not determine for themselves, by taking infestation records, the correct time to apply insecticides. Further, many planters do not obtain adequate control on their farms when depending on farm laborers or tenants to follow an insect control schedule.

"It is believed that a program o schedule of applications which every one could readily put into effe might prove more profitable in th long run than the one we now hav

based on infestation counts which frequently are not made," he declared.

While it can be argued that on a calendar basis too much poison might be used some years and not enough in others, Dr. Gaines pointed out that those who check their cotton for insect damage wou'd automatically use the correct number of applications, regardless of recommendations. Moreover, the many who do not check for insects or cannot hire the necessary checkers will obtain control from the proposed schedule.

"We have obtained many reports of success attained this year by planters who followed the recommended schedule of applications, as well as the failure to control the weevil by planters who followed an irregular poisoning schedule. The cost of insecticides, and application of the same, is small indeed compared to the profits secured from the enormous yields produced as a result of adequate protection of the crop," he said.

Narrow Swath Widths

In discussing application of insecticidal sprays with airplanes, Dr. Gaines reported that the best results have been observed from airplane sprays distributed in swath widths of not more than 6 to 8 ft. wider than the boom. Twenty-eight nozzles on a 33 ft. boom result in a good distribution, he said.

He added that better distribution of dusts can be obtained by the use of flagmen to direct pilots. In the case of spray distribution, flagmen are absolutely essential. "In fact, most pilots request that the planter furnish flagmen in order to insure proper distribution of the chemical."

Why hasn't the pink boll worm ravaged American cotton fields like the boll weevil, which spread destruction across most of the cotton belt early in this century? "Painstaking research, cautious quarantine measures, and effective control methods are three good reasons," answered S. E. Jones, coordinator, Pink Bollworm Research Center, Brownsville, Texas. The agricultural scientist pointed out how the pest has been held in check and how farmers have not, except in 1952, suffered widespread losses.

However, pest control measures will have to be adjusted to meet new conditions, and research must be geared to meet new emergencies as the pink bollworm spreads into new areas, Dr. Jones warned.

"The pest has not created great suffering and bankruptcy of farms and banks as did the boll weevil," he said. "Yet it at times has so completely destroyed fields of cotton that a pick-sack was never put in them."

Infestation of this destructive worm, which cost the cotton industry almost $35 million in 1952, has now spread to Arizona, New Mexico, Oklahoma, Arkansas and Louisiana. In 1955, the highest infestation ever reported at El Paso, Texas, since the insect appeared there 35 years ago, caused severe damage on a comparatively small acreage.

"There are enough poor jobs of cotton insect control being done to make the annual loss to insect pests look bad," Dr. H. G. Johnston of the National Cotton Council declared at the conference.

The council's chief entomologist said that while a "reasonably acceptable" record of cotton insect control has been made, the average 10% annual reduction from insect damage for the period 1945-55 is entirely too high for the level of efficiency that we must have in future cotton production.

He told the conferees that cotton insects can be controlled only by individual growers on individual farms. These individual farms present a wide variety of problems related to insect control, and also various levels of resources and managerial skills. "Some cotton growers are good managers and are doing good jobs of insect control, but by and large, cotton growers and their managerial skills have not kept pace with rapid development of farm technology," he said.

He laid special emphasis on the need for a more effective educational program which will reach the individual grower and help him to develop the know-how required to cope with insect control problems and other technical phases of cotton production.

Dr. Johnston asserted that cotton insect control still poses many problems and most of them are of major character. Moreover, the relative importance of these problems is constantly shifting as more emphasis is placed upon the integration of improved practices for achieving greater cotton production efficiency.

"The rapid strides made toward complete mechanization of cotton production demands more effective and dependable insect control than ever before," he said.

Boll weevils got out of control during 1955 in large areas of the midsouth, Dr. Charles Lincoln of the University of Arkansas reported.

Appearing on a panel on insect control at the conference, Dr. Lincoln said that many farmers in limited areas of Mississippi, Louisiana and Arkansas experienced serious difficulty in control of this traditional foe during the 1955 season.

Farmers who were successful used heavy applications of insecticides at close intervals, the entomologist explained. He added that technologists at Louisiana State University and at federal laboratories at Tallulah, La., and Stoneville, Miss., conducted studies of the situation to determine causes and whether the boll weevil is building resistance to recommended insecticides.

Timing Important

Bad timing and poor application of insecticides caused most of the failures in the Southwest to control cotton insects this past season, Dr. Dial F. Martin, entomology professor, Texas A&M College, said.

In a panel discussion Dr. Martin said, "We allow certain pests, such as the boll weevil and the bollworm, to become established early in the season before a control program is started. Next attempts are made to increase the interval between applications of insecticides and, if adverse weather intervenes, real trouble develops."

In the case of the boll weevil, which posed a major problem in many areas in 1955, Dr. Martin said investigation of most of the reported failures revealed that growers allowed the weevil population to increase in large numbers before control measures were begun. This, coupled with minimum dosages of insecticides or too long an interval between applications, failed to result in adequate control. "A successful control program must be started before the weevils get out of hand and the interval between applications must be short enough so that kill will be obtained during the entire time elapsing between applications. This prevents feeding and egg-laying by adults," he said.

In the case of bollworms, Dr. Martin warned that if the larvae are allowed to develop to the third or fourth stage before control is started, the results will be disappointing. Best results will be obtained, he asserted, if control measures are begun when bollworm eggs and newly hatched worms appear on the cotton plants.

Despite evidence of the appearance of resistance by boll weevils to recommended insesticides, there is no reason for farmers and the insecticide industry to go into a tail spin.

Dr. F. C. Bishopp, entomologist from Silver Spring, Md., reassured conferees that while there is need for the most careful analysis of the resistance factor there is no cause for alarm.

"The development of resistance of certain insects to insecticides has long been recognized and has presented serious difficulties in the control of a number of pests, resistance has been most striking and most publicized among the flies, mosquitoes, scales and moths. No outstanding cases of this phenomenon have been recorded among the beetles," he said.

He went on to point out that it is generally agreed that a number of factors aside from possible boll weevil resistance could explain in part the difficulty experienced in controlling this pest in certain areas during the past season.

Plenty of Weevils

He listed the heavy carryover of weevils last winter and climatic conditions as prime factors that caused heavy weevil damage in 1955.

"It appears that many cotton raisers didn't take the situation seriously until the first generation weevils were on them, and some paid little attention until even later when their fields were heavily infested. Every farmer knows that it is practically impossible to make a crop after heavy migration has set in. About all he can expect to do under such conditions is to protect the nearly mature bolls," he asserted.

As for weather conditions, he declared these were extremely favorable in many areas for boll weevil development and unfavorable for effective use of insecticides. These conditions may have been equally as important as actual resistance to insecticides, Dr. Bishopp said.

Modern research and commercial chemicals today allow the cotton farmer to defoliate his plants according to harvesting time-tables and over-all production planning.

This production practice has been made more efficient by a great volume of intensive research and testing in recent years, Dr. W. H. Tharp, physiologist, USDA, told the conference.

Outlining technical aspects of tests conducted on various chemicals recently, Dr. Tharp included a report on the performance of amino triazole, a new material that inhibits second growth on plants while causing original leaves to fall ahead of nature's schedule.

"It is pretty well agreed that defoliation for machine harvesting cotton is a must in much of Texas," Fred C. Elliott, cotton specialist of the Texas Agricultural Extension Service said.

Integrated Research

If research is to provide answers to cotton farm problems it must be integrated, then interpreted in simple, meaningful language and piped directly to the farmer.

Dr. A. H. Moseman, crops research director with the U.S. Department of Agriculture, told the conference that this means coordination of state and federal research, public and private research, and also more emphasis on the interrelation of production, marketing and utilization research.

The research director emphasized that if practices on the farm are to be integrated, the research behind the practices must be integrated, too. He cited a great need for more basic research, as contrasted with that which is necessary to solve current, pressing cotton-producing problems.

"Our imbalance in basic research is readily apparent to our scientific associates in other countries," Dr. Moseman said. "It is recognized increasingly also by those who use and support research in this country. This problem is one of program planning and management."

SOUTH DAKOTA

(Continued from page 2)

the same rate, reported L. O. Fine, professor of agronomy at the college. As early as 1900 the public recognized that what affects quantity also affects quality, he said.

If a farmer is going to feed a crop on his farm he will be ahead to use plenty of nitrogen fertilizer, Mr. Fine stated. The increase in protein content in his crop may more than pay the cost of the fertilizer.

Results from fertilizer on corn were poor this year because of the extremely dry weather, F. E. Shubeck, associate agronomist, told the dealers. The only exception noted this year was a severely eroded field. Here the corn yields almost doubled.

On the other hand, anyone can get a response to fertilizer in small grain, even in most dry years, reported L. F. Puhr, professor of agronomy. As small grains cannot use much of the nutrients in the soil due to their cool season growth, they can always use fertilizer, he said.

Farmers will use more fertilizer when they fully realize how much it increases production, he said. One interesting point noted in the experiments was that it seems to make no difference in yield whether the fertilizer is fall or spring applied, Mr. Puhr stated.

What happens to fertilizer that is not used by a crop as in the case of that applied to corn this year? Some is lost by erosion and leaching and some nitrogen is valatilized as ammonia, B. L. Brage, associate professor of agronomy, told the group. However, some of it is available to the next crop and quite a bit of it is immobilized by the soil. That which is immobilized is not lost, stated Mr. Brage. It is still in the soil and can be used at a later time when it is made available by biological processes and weathering.

The best way to get farmers to use fertilizer is to show them what it can do for them, extension soil specialist D. M. Switzer informed the dealers. And the best way to teach is through demonstration, he added.

Another point brought out by Mr. Switzer is that 57% of the farmers in the area learn new practices from their neighbors.

With these two points in mind, test-demonstration farms are used in South Dakota. Typical farms in an area are selected and farmers agree to use some of their land for test plots. Neighbors can then see how much fertilizers can increase yields.

In concluding the short course Dr. McVickar estimated that the total use of fertilizer should continue to increase. Up to 2½% more plant food will be available next year.

The use of fertilizer must continue to go up. "That is the only way farmers can survive this price squeeze," Dr. McVickar concluded.

Edward J. Massaglia Assistant Head of Atlas Chemicals Division

WILMINGTON—Edward J. Massaglia has joined Atlas Powder Co. as assistant general manager of the chemicals division, it was announced recently by Ralph K. Gottshall, president. Mr. Massaglia formerly was vice president and director of Pfizer International, Inc., serving with that organization from 1951 to 1955.

Prior to that, he was engaged in development and manufacturing work for Chas. Pfizer & Co., Inc., parent company of Pfizer International. He also served as a development engineer for Niagara Alkali Co. and production manager for Benzol Products Co.

Mr. Massaglia holds bachelor's and graduate engineering degrees from New York University and took advanced management courses at the Harvard graduate business school.

Croplife®

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

Wanted: Box Cars

Upon reading USDA reports that nitrogen and potash available for 1956 agricultural use will be up some 4%, and that the general supply situation for all kinds of chemical products is easy, the tendency is to sit back and breathe easily. "There will be plenty of materials available next season, so I'll just wait until then before stocking up," seems to be the logical conclusion.

It is true that the manufacturing segment of the industry has the capacity to fulfill the anticipated needs of agriculture for 1956 and so far as it is concerned, the demand will be met. But there is another factor which must be considered, and that is transportation facilities.

No matter how much potash may be at the mines or how much nitrogen and mixed fertilizers may be at various plants, it is not "available" to the trade unless there are ample numbers of railroad cars to carry it from there to here.

All indications point to an acute shortage of box cars come next spring. Fertilizer industry spokesmen have viewed with some alarm this transportation bottleneck in the making and many are saying frankly that there will be shortages in a number of spots around the country unless at least part of the tonnage is delivered ahead of the inevitable rush.

Transportation executives in many trades have been in a dither for months now, because of a continuing shortage of cars. The grain trade, for instance, has felt a severe pinch as the number of available box cars becomes less in the face of greater volume of shipments.

One executive in the grain trade, responsible for arranging transportation for many thousands of tons of this commodity, told Croplife that the box car shortage is serious now, but will become even more acute after the first of the year.

The railroads, he said, have been slow to put new cars into service, and the new ones now ordered will not be ready for actual use until late in 1956. Steel companies, he said, do not plan to get at these orders for quite some time yet. "We are in for a tight session for the next 16 months or so," he declared.

Asked why this should be, he said that the answer is simple. "The national economy is expanding in every line, placing a heavier demand on shipping facilities of all kinds. At the same time, the number of box cars is shrinking." Obviously, this means greater competition for the existing space and it is not likely that the fertilizer industry can expect to claim for itself, use of a sizeable portion of the rolling stock at precisely the time it is needed.

Does this not suggest strongly to the alert fertilizer dealer and manufacturer that orders should be placed now for at least part of next spring's stock? It would be very wise to do so.

This is certainly not a "scare" device on the part of the industry to make sales. The situation is very real . . . enough so to cause real worry on the part of those responsible for getting the fertilizer materials to the places where they will be needed.

Still another factor enters into the picture. Due to the shortage and the natural clamor to get freight cars, the tendency is for people in different parts of the country to "hog" them. That is, when cars are received, they are unloaded and kept on a siding until they can be reloaded and sent somewhere else. Thus, the railroads themselves are unable to control the use of many of their own cars!

It is not a light matter, this lack of transportation facilities. Naturally, most of the fertilizer materials will be accommodated, but the knowledge that 90% of the trade is being taken care of will be small solace if the ones among the small percentage are unable to get deliveries.

Yes, the transportation bottleneck is likely to become tougher, but according to our local freight authority, the international situation also has a bearing on how acute the thing might become. We can get by somehow with things as they are, he declared, but added, "God help us if we get into some kind of an international fracas."

Irrigation on Increase

Irrigating facilities are on the increase throughout the country, with alert growers realizing that dependence on erratic rainfall is sometimes a poor bet. Both the fertilizer and pesticide industries look upon this development with favor, since the end result is likely to mean a more steady market for these two trades.

Attitudes toward irrigation are changing, which may be a factor in the trend toward further use of "artificial rain." Instead of regarding irrigation as being merely a supplement to rainfall, the reverse is being advocated in learned quarters. At least one person has raised his voice in calling rain a supplement to irrigation, rather than the other way around.

He is Audrey D. Hibbard, Missouri University horticulturalist, who told a recent meeting of his state society that too much of our thinking on irrigation has been in terms of its being a sort of stop-gap measure to be used when the rains fail to come. Instead, he avers, irrigation is not just a matter of putting on water during drouth conditions. It should be run much of the time to give adequate moisture to many crops.

In areas where drouth has cut fertilizer sales greatly during the past season and previously, the prospect of widespread irrigation is indeed heartening. Although well fertilized crops do better under drouth conditions than their nutrient-hungry plants in unfertilized fields, still the assurance that there will be no water shortage during a growing season will be a marked incentive for the grower to invest in fertilizer materials. Much of the gamble will be gone under these conditions.

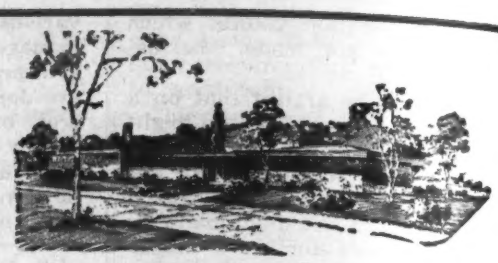
The sale of pesticidal materials stands to improve, too, since under irrigation conditions, the grower can ill afford to have gone to the expense of watering facilities, invested in fertilizer and the labor involved, only to allow insects, weeds or plant disease to nullify all of this effort.

In his studies on the subject, Mr. Hibbard has found that day and night operations of an irrigation system will pay off, particularly in orchards where soil water as deep as 15 to 20 feet is utilized by the plants in normally wet years. When drouth hits, however, the trees may die in a couple of years. Because of this excessive drain of moisture by an orchard, he stresses the necessity of putting plenty of water in the soil regardless of moisture conditions.

Predictions have been made rather freely in the chemical trade, that the next few years will see a significant increase in watering devices on many crops. As this condition becomes more widespread, the spectre of drouth becomes less of a menace to all the industries connected with agriculture.

Quote

"Some may feel that our soil insect problems are solved and that little remains to be done. But in my book, we have only written the introduction to what should be one of the largest and best chapters in the history of economic entomology." —Dr. George C. Decker, Illinois Natural History Survey Entomologist and president, Entomological Society of America.



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MEETING MEMOS

Dec. 28-30 — American Phytopathological Society, Atlanta, Ga.; Glenn S. Pound, University of Wisconsin, Madison, Wis., Secretary.

Dec. 29—Symposium on Health Hazards of Chemicals, before the Pharmacy Section at Annual Meeting of American Association for the Advancement of Science, Atlanta.

1956

Jan. 3-4—Annual Nebraska Fertilizer Dealers Conference, Activities Bldg., University of Nebraska College of Agriculture, Lincoln.

Jan. 4-6—Weed Society of America, Charter Meeting, Hotel New Yorker, New York; W. C. Shaw, U.S. Department of Agriculture, Beltsville, Md., Secretary-Treasurer.

Jan. 5-6—Second Annual Mississippi Insect Control Conference, Mississippi State College.

Jan. 5-6—Texas Fertilizer Conference, Texas A&M College, College Station, Texas.

Jan. 6—Northeastern Weed Control Conference, Hotel New Yorker, New York, R. J. Aldrich, Rutgers University, Secretary.

Jan. 10-11—Eighth Annual North Carolina Pesticide School, North Carolina State College, Raleigh.

Jan. 11-12—Wisconsin Insect Control Conference, Lorraine Hotel, Madison, Wis.

Jan. 15-17 — New Mexico Grain & Feed Dealers Assn., Annual Convention, Hilton Hotel, Albuquerque, with Special Portion for Fertilizer and Farm Chemical Dealers; H. B. Hening, Albuquerque, Secretary.

Jan. 15-18—Northwest Vegetable Insect Conference, Portland, Ore.

Jan. 16-18—Northwest Vegetable Insect Control Conference, Imperial Hotel, Portland, Ore.

Jan. 16-18—Southern Weed Conference, Ninth Annual Meeting, Hotel Jung, New Orleans; Dr. E. G. Rodgers, Florida Agricultural Experiment Station, Gainesville, Secretary-Treasurer.

Jan. 17—Georgia Plant Food Educational Society, Annual Meeting, University of Georgia, Athens, Ga., Fielding Reed, American Potash Institute, Mortgage Guarantee Bldg., Atlanta 3, Ga., secretary-treasurer.

Jan. 18—Western Oregon Fertilizer Dealer Meeting, Sponsored by the Pacific Northwest Plant Food Assn., Oregon State College, Corvallis, Ore.

Jan. 18-20 — Western Cooperative Spray Project, Imperial Hotel, Portland, Ore.

Jan. 26-27—Custom Spray Operators Training School, University of Illinois.

Jan. 26-29 — Agricultural Aircraft Assn., Inc., Sixth Annual Convention, Wilton Hotel, Long Beach, Cal.; Wanda Branstetter, Route 3, Box 1077, Sacramento, Cal., Executive Secretary.

Jan 27—Colorado Agricultural Chemicals Assn., Cosmopolitan Hotel, Denver.

Jan. 30—Wisconsin Fertilizer and Lime Dealers Conference, Memorial Union, University of Wisconsin, Madison, Wis.

Jan. 30-31—National Cotton Council of America, Annual Meeting, Buena Vista Hotel, Biloxi, Miss.

Jan. 30-Feb. 3—Purdue Pest Control Operators School, Purdue University, Lafayette, Ind.

Feb. 6-8—Agronomy Section, Association of Southern Agricultural Workers, Atlanta (Ga.), Biltmore Hotel; W. E. Colwell, North Carolina State College, Secretary.

Feb. 6-8—Cotton States Branch, Entomological Society of America, Biltmore Hotel, Atlanta, Ga. W. G. Eden, Alabama Polytechnic Institute, Auburn, Ala., secretary-treasurer.

Feb. 7-9 — National Garden Supply Trade Show, Kingsbridge Armory, New York City.

Feb. 14-16—Agricultural Chemicals Conference, Lubbock, Texas.

Feb. 15-17—California Weed Control Conference, Sacramento and Davis, Cal.; Oliver A. Leonard, Botany Dept., University of California, Davis, Cal., Secretary.

Feb. 15-17 — Western Weed Control Conference, Sacramento and Davis, Cal.; W. C. Robacker, U.S. Department of Agriculture, Nevada Agricultural Experiment Station, Reno, Nev., Secretary-Treasurer.

Feb. 16-17—Middle West Soil Improvement Committee's annual joint meeting of the fertilizer industry and Universities. Edgewater Beach Hotel, Chicago.

Feb. 22-24—Midwestern Chapter, National Shade Tree Conference, LaSalle Hotel, Chicago, Noel B. Wysong, Cook County Forest Preserve, River Forest, Ill., Secretary.

March 6-7—Fifth Annual Western Cotton Production Conference, Fresno Hacienda, Fresno, Cal.

March 14-18 — National Agricultural Chemicals Assn., Spring Meeting, Hollywood Beach Hotel, Hollywood, Fla., Lea S. Hitchner, NAC Executive Secretary, 1145 19th St. N.W., Washington 6, D.C.

March 28-30—North Central States Branch, Entomological Society of America, Purdue University Memorial Union, Lafayette, Ind.

June 10-13—National Plant Food Institute, Annual Convention, the Greenbrier, White Sulphur Springs, W. Va.

June 28-30—Association of Southern Feed & Fertilizer Control Officials, 14th Annual Convention, Hotel Roanoke, Roanoke, Va.; Bruce Poundstone, Kentucky Agricultural Experiment Station, Lexington, Ky., Secretary-Treasurer.

June 28-30—Seventh Regional Fertilizer Conference of the Pacific Northwest, Chinook Hotel, Yakima, Wash.

July 25-27—Northwest Association of Horticulturists, Entomologists and Plant Pathologists Conference, Northwest Washington Experiment Station, Mount Vernon, Wash.

Aug. 17-25—Tenth International Congress of Entomology, McGill University and University of Montreal, Montreal, Canada, J. A. Downes, Science Service Bldg., Carling Ave., Ottawa, Ontario, Canada, Congress Secretary.

Nov. 19-20—Eastern Branch, Entomological Society of America, Hotel Haddon Hall, Atlantic City, N.J., B. F. Driggers, Rutgers University, New Brunswick, N.J., Secretary.

Midwestern Shade Tree Conference Scheduled Feb. 22-24

CHICAGO—The 11th annual meeting of the Midwestern Chapter of the National Shade Tree Conference will be held Feb. 22-24 in the LaSalle Hotel, Chicago.

Registration of delegates will start at 8:30 a.m. Feb. 22, and the first paper on the educational program will be presented at 11 a.m. An attendance of more than 300 members and guests is expected.

Included on the program are the following topics and speakers:

"Arboriculture on Industrial Grounds," Richard C. Sherman, Caterpillar Tractor Co., Peoria, Ill.; "Dutch Elm Disease Control Program—Sanitation," Dr. Richard Campana, Illinois Natural History Survey, Urbana; "Dutch Elm Disease Control Program — Spraying," Ernie F. Herrbach, horticulturist, Standard Oil Co., Chicago; "Insect Problems of the Arborist," Dr. Donald L. Schuder, assistant entomologist, Purdue University, Lafayette; "Street Tree Work by Contract and City Employees," Thomas F. Greeley, Jr., village forester, Oak Park, Ill.

"Use of Liquid Fertilizers," Dr. Paul E. Tilford, executive secretary of the National Arborist Assn., Wooster, Ohio; "Regulatory Measures to Prevent Spread of Tree Diseases," C. A. Boyer, chief of the Bureau of Plant Industry, Michigan Department of Agriculture, Lansing, Mich.; "The Use of Herbicides Near Ornamentals," Dr. L. C. Chadwick, Department of Horticulture, Ohio State University, Columbus; "Anthracnose on Shade Trees and Control Measures," Dr. J. C. Carter, head of the Section of Applied Botany and Plant Pathology, Illinois Natural History Survey, Urbana.

NEW LEASE FORM

URBANA — A new livestock-share model lease form for use by farm landlords and tenants has been designed at the University of Illinois. F. J. Reiss, farm economist, describes it as a simple but complete form that suggests arrangements that can result in more profits from a rented farm and better landlord-tenant relations. The new lease form includes a provision for reimbursing the tenant for his part of the unused fertilizer when he moves off.

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Baughmann Manufacturing Co., Inc.....
Beaird, J. B., Co. .....
Bemis Bro. Bag Co. .....
Blue, John, Co. .....
Bradley & Baker 3
Burkhardt-Larsen Co. .....
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General Chemical Division, Allied Chemical & Dye Corp. .....
Gotcher Engineering & Mfg. Co.....
Grace Chemical Co. .....
Grand River Chemical Div., Deere & Co...

Hahn, Inc. .....
Hammond Bag & Paper Co. 5
Henderson Mfg. Co. .....
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Niagara Chemical Division, Food Machinery and Chemical Corp. .....
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